PB89-135271

Superfund Record of Decision (EPA Region 1)
Laurel Park Site, Naugatuck, Connecticut
(First Remedial Action), June 1988

(U.S.) Environmental Protection Agency
Washington, DC

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EPA/ROD/R01-88/025
June 1988

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EPA

Superfund Record of Decision:

Laurel Park, CT

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16. Abstract (Limit: 200 words)

The Laurel Park site is located in the town of Naugatuck, New Haven County, Connecticut. The landfill, occupying about 19-acres of the 35-acre site, lies entirely within the drainage basin of the Naugatuck River. Additionally, the landfill is located on a hill in close proximity to fractured bedrock and bedrock aquifer. It is assumed that waste disposal actions began in the late 1940s. It was common practice to burn some of the waste brought to the site. Operational problems at the landfill were reported in the early 1960s. Complaints included chemical spills on roads leading to the landfill, large quantities of black acid smoke, odors, and blowing litter. In 1961, a lawsuit was filed and, in 1964, the owner was ordered to cease burning certain waste types. Between 1965 and 1966, the Connecticut State Department of Health investigated reports of contaminated surface water. Construction of a leachate collection system was completed in 1984. The operators of Laurel Park were ordered in January 1981 to stop landfilling in an unapproved excavation area. By April 1987, the landfill ceased receiving wastes. The primary contaminants of concern affecting ground water, soil, surface water, and sediments include: VOCs, organics, and metals.

The selected remedial action for this site includes: installation of a RCRA cap over all waste disposal areas; rehabilitation of existing leachate collection system, (See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision
Laurel Park, CT
First Remedial Action - Final
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16. ABSTRACT (continued)

supplemented by a shallow ground water extraction system consisting of a French drain and/or ground water extraction wells, with discharge and offsite treatment at the Naugatuck Water Pollution Control Facility (NWPCF); and monitoring of all media. The estimated present worth cost for this remedial action is $21,706,300 without pretreatment, or $23,078,200 including pretreatment, if necessary.

ATTENTION

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RECORD OF DECISION

Laurel Park, Inc.
Naugatuck, Connecticut

STATEMENT OF PURPOSE

This Decision Document represents the selected remedial action for the Laurel Park, Inc. Site in the Borough of Naugatuck, CT developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Contingency Plan, 40 CFR Part 300 et seq., 47 Federal Register 31180 (July 16, 1982), as amended. The Region I Administrator has been delegated the authority to approve this Record of Decision.

The State of Connecticut has concurred on the selected remedy and determined, through a detailed evaluation, that the selected remedy is consistent with Connecticut laws and regulations.

STATEMENT OF BASIS

This decision is based on the administrative record which was developed in accordance with Section 113(k) of CERCLA and which is available for public review at the Howard Whittemore Memorial Library in Naugatuck and the EPA Region I Waste Management Division Records Center in Boston. The attached index identifies the items which comprise the administrative record upon which the selection of the remedial action is based.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy for the Laurel Park, Inc. Site includes both source control and management of migration (or ground water control) components to obtain a comprehensive approach for site remediation.

1. Cap

The objective of the cap (cover) is to reduce infiltration into the landfill so that 1) the generation of leachate is reduced, and 2) the water table is lowered such that it is below landfill material. An additional objective is to eliminate direct human exposure to wastes, contaminated soil, and leachate.

These objectives are expected to be achieved by designing a cap that complies with the Resource Conservation and Recovery Act (RCRA) landfill closure regulations.

Detailed design criteria for the cap will be developed during remedial design to allow for the use of the most current materials and procedures appropriate for the specific conditions at the site. The proposed conceptual cover design, as presented in the FS, will be a multimedia cap and will include provisions for gas collection and venting. In addition, a security fence will be erected around the perimeter of the landfill.

2. Existing Leachate Collection System

A perimeter leachate collection system exists at the landfill. This system will remain in operation; however, it will be rehabilitated and may require upgrading during remedial design.

3. Leachate Collection/Ground Water Extraction System

The objectives of the leachate collection/ground water extraction system are to:

- extract leachate not intercepted by the existing leachate collection system,
- extract highly contaminated shallow ground water to the bottom of the shallow bedrock in the immediate vicinity of the landfill, and
- supplement the cap in depressing the water table.

These objectives are expected to be achieved given the following design criteria:

- installing a French drain and/or extraction wells to the bottom of the shallow bedrock zone, and
- developing the depth and location specifics for the system during remedial design.

The proposed method for extracting leachate and contaminated ground water to the bottom of the shallow bedrock will be a combination of a French drain and ground water extraction wells where the installation of the French drain is not possible. The benefits of each of these technologies will be considered in greater detail during the remedial design, and the actual design details will be determined and specified at that time.

Leachate collection and ground water extraction are the most effective means of capturing ground water flow in the highly fractured shallow bedrock. While contaminant migration is not limited to this upper, fractured zone, the complex hydrogeology of the site makes it impossible to ensure complete capture of all contaminated ground water and leachate migrating from the site or to extract contaminated ground water in deep bedrock. It is therefore impossible to remediate the entire bedrock aquifer.

The mechanism for determining when the ground water extraction system will be shut off will be determined during design and implementation. The point at which the system will be shut off will depend upon when the site specific objectives of the system are accomplished.

4. Treatment of Leachate and Contaminated Ground Water at the NWPCF

Leachate and extracted ground water will be discharged into the municipal sanitary sewer for treatment at the Naugatuck Water Pollution Control Facility (NWPCF). Discharge of leachate and contaminated ground water to the sewer will require compliance with applicable pretreatment regulations mandated in the pretreatment permit issued by the state.

Leachate and extracted ground water will traverse three distinct segments: Andrew Avenue, the Rubber Avenue Interceptor, and the Westside Interceptor. A new sewer line, dedicated to leachate and extracted ground water, will be constructed along Andrew Avenue from the landfill to the Rubber Avenue Interceptor. The existing interceptors will be used to convey the leachate from there to the NWPCF.

The estimated daily leachate and ground water flow from the landfill is approximately 20,000 gallons. The NWPCF is designed to treat 10.5 million gallons/day, while the current flow is 5.5 million gallons/day. The NWPCF is required to have an NPDES permit to discharge to the Naugatuck River and has a history of compliance with its permit.

Although not required by the State at this time, if required at any time in the future, pretreatment to a level acceptable for discharge to the NWPCF will be implemented.

5. Monitoring

Monitoring of environmental media will be conducted for thirty years to monitor the effectiveness of the remedy, to monitor the bedrock aquifer relative to the ground water and hydraulic standards and institutional controls, and to identify further impacts to human health and the environment. Additionally, as required by CERCLA at sites where any hazardous substances, pollutants or contaminants remain, a review of the site will occur every five (5) years.

DECLARATION

The selected remedy is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. However, because the various treatment technologies for the source material are either impracticable, involve unacceptable risks to workers and others, are not cost-effective, or are insufficiently protective, this remedy does not satisfy the statutory preference for treatment as a principal element. Treatment of leachate and contaminated ground water will occur at the NWPCF, and will be the maximum extent to which treatment is practicable.

June 30, 1988
Date

Michael R. Deland
Michael R. Deland
Regional Administrator

RECORD OF DECISION SUMMARY

LAUREL PARK, INC. SITE

NAUGATUCK, CT

JUNE 30, 1988

LAUREL PARK, INC.
TABLE OF CONTENTS

Chapter Page Number

I. SITE NAME, LOCATION, AND DESCRIPTION 1

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES 1
  A. Remedial History 1
  B. Federal Enforcement History 3

III. COMMUNITY RELATIONS 4

IV. SCOPE AND ROLE OF RESPONSE ACTION 5

V. SITE CHARACTERISTICS 6
  A. Hydrogeology 6
  B. Surface Water and Sediment 7
  C. Leachate and Soils 7
  D. Landfill 8

VI. SUMMARY OF SITE RISKS 9

VII. DOCUMENTATION OF SIGNIFICANT CHANGES 10

VIII. DEVELOPMENT AND SCREENING OF ALTERNATIVES 10
  A. Statutory Requirements/Response Objectives 10
  B. Technology and Alternative Development and Screening 11

IX. DESCRIPTION/SUMMARY OF THE ANALYSIS OF ALTERNATIVES 13

X. THE SELECTED REMEDY 19
  A. Description of the Selected Remedy 19
  B. Estimated Remedial Schedule 23
  C. Institutional Controls 23
  D. Rationale for Selection 24

XI. STATUTORY DETERMINATIONS 29
  A. The Selected Remedy is Protective of Human Health and the Environment 29
  B. The Selected Remedy Attains ARARs 29
  C. The Selected Remedy is Cost Effective 32
  D. The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable 32
  E. The Selected Remedy Does Not Satisfy the Preference for Treatment as a Principal Element 33

XII. STATE ROLE 33

ATTACHMENTS

Site Location Map . . . . Attachment 1
Endangerment Assessment - Table 2-3 . . . . Attachment 2

APPENDICES

Responsiveness Summary . . . . Appendix A
Administrative Record Index . . . . Appendix B
State Concurrence Letter . . . . Appendix C

I. SITE NAME, LOCATION, AND DESCRIPTION

The Laurel Park, Inc. landfill (previously known both as Murtha Dump and Laurel Park Landfill) is located in the Town of Naugatuck, a borough of New Haven County, Connecticut. The landfill is about one mile west of the Naugatuck River and Connecticut Route 8, and about one mile southwest of downtown Naugatuck. Naugatuck has an estimated current population of 26,500. (See Attachment 1 - Site Location Map.)

The landfill occupies about 19 acres of the 35 acre site, and is located prominently on the upper north and west slopes of Huntington Hill (also known as Hunter's Mountain). Most of the area immediately bordering the site is forested. About 50 homes are located within a one-half mile radius of the site, primarily to the north, east and southeast of the landfill, with the closest residents located approximately 1,000 feet to the north and southeast of the site.

Topographic surface features in the Naugatuck area occur in the form of elongated northwest/southeast trending hills and ridges. Huntington Hill, upon which the Laurel Park landfill is located, is a bedrock supported hill covered by till. Till depths range from seventy feet on the western flank of Huntington Hill, to zero on the eastern flank. The landfill is therefore in direct contact with both till and bedrock.

The landfill lies entirely within the drainage basin of the Naugatuck River, which flows toward Long Island Sound, about 23 miles to the south. Surface runoff from the landfill flows to two tributaries of the Naugatuck River - Spruce Brook and Long Meadow Pond Brook. Spruce Brook is one-half mile west and Long Meadow Pond Brook is one mile north of the landfill. Long Meadow Pond Brook is fed by an unnamed stream which begins at the base of the landfill.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Remedial History

A more detailed description of the site history and past response actions are presented in the Remedial Action Master Plan (RAMP) and the Remedial Investigation (RI) Report.

The date when waste disposal actions began at the site is not known; however, it is most likely to have occurred in the late 1940's.

During the early years of operation, the common practice was to burn some of the waste brought to the site. Operational problems were reported at the landfill in the early 1960's. Problems complained of included spills of chemicals on roads leading to the landfill, large quantities of black acrid smoke, odors, and blowing litter. In 1961 a lawsuit was filed, Lanonette et al. v. Harold Murtha et al. which alleged in part that the operation of the waste dumps created a nuisance. Judgment in the case was handed down in 1964 and the owner was ordered to cease open burning of certain wastes, except at certain times, and to pay several thousand dollars in damages. In 1966 Laurel Park, Inc. was incorporated.

Between 1965 and 1966 the State Department of Health investigated reports of leachate contaminating surface water, determined that contamination was occurring, and recommended steps to be taken to eliminate pollution.

In 1978, the Connecticut Department of Environmental Protection (CT DEP) issued a vertical expansion permit (No. 088-1) for an additional 250,000 cubic yards of waste.

On January 28, 1981, CT DEP issued a Cease and Desist Order, ordering the operators of Laurel Park, Inc. to stop landfilling in an unapproved excavation area.

In February 1981, a preliminary site assessment of the landfill was submitted to EPA by Ecology and Environment, Inc.

On March 5, 1981, DEP issued Order No. 3003 to Laurel Park, Inc., which required that an engineering study be conducted to determine the nature and extent of surface and ground water contamination resulting from the disposal of refuse and waste material at the Laurel Park landfill, and that such contamination be minimized. Sullivan and Waldo, Consulting Environmental Engineers, submitted an engineering report on October 29, 1981 in compliance with that order. (Fuss & O'Neill, Consulting Engineers, performed the hydrogeologic studies.)

On October 23, 1981, when EPA published the Interim Priorities List (IPL) of candidates for response action under CERCLA, Laurel Park, Inc. was included on that list. In December 1982, Laurel Park, Inc. was proposed for the National Priorities List (NPL) (47 FR 58476, December 30, 1982). In September 1983 the site was listed on the NPL (48 FR 40658, September 8, 1983).

In November 1982, Fred C. Hart Associates, Inc. was retained by Laurel Park, Inc. to conduct geologic and hydrogeologic studies of the landfill. These studies were released in February 1983.

On February 1, 1983, the Connecticut Superior Court in Hartford issued a judgment ordering Laurel Park, Inc. to take the following steps as conditions for allowing it to continue disposing of solid waste:

1. Immediately prepare a proposal for ground water monitoring and implement the proposal upon approval by DEP.
2. Install and maintain a leachate collection and treatment system, upon approval of plans by DEP, by October 31, 1983.
3. Submit to DEP a performance bond covering the cost of installing and maintaining the leachate system for five years.
4. Supply potable (i.e., bottled) water to certain specifically identified neighboring residents.
5. Provide a municipal water system to those residents if Laurel Park, Inc. applies for and receives permission for horizontal expansion of the landfill.

On October 13, 1983, DEP issued a Cease and Desist order prohibiting operation of the landfill based on the detection of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) in samples collected by the DEP. Further extensive sampling by CT DEP did not confirm the presence of 2,3,7,8-TCDD. An appeal to the Superior Court by Laurel Park, Inc. resulted in a temporary injunction of the state order, which allowed reopening of the landfill.

Construction of the leachate collection system, which was required in the February 1983 judgment, was completed in 1984.

CT DEP proposed a monitoring program in April 1984 to be conducted by Laurel Park, Inc. utilizing the services of Fred C. Hart Associates. That program consisted of installing and sampling new monitoring wells, as well as sampling surface water, soils, and sediments.

On April 16, 1987, Laurel Park, Inc. notified the CT DEP they had ceased accepting wastes.

B. Federal Enforcement History

In May 1985, Uniroyal, Inc. (now Uniroyal Chemical Company, Inc.) entered into an administrative consent order with EPA whereby it agreed to conduct the Remedial Investigation/Feasibility Study

("RI/FS") for the Laurel Park site. Laurel Park, Inc. was also a party to this order for the sole purpose of providing access during the RI/FS. The consent order required Uniroyal to perform all work in conjunction with the RI/FS at the site. The RI and the Endangerment Assessment (EA) were prepared by Malcolm Pirnie, Inc., a consultant for Uniroyal, and released to the public in February 1987. The Draft FS was released to the public on May 3, 1988 and was also prepared by Malcolm Pirnie.

Two additional orders have been issued regarding the site. First, on June 16, 1986, EPA issued a unilateral order to Uniroyal and Laurel Park, Inc. Under this order Uniroyal constructed a fence around an overflowing manhole connected to the leachate collection system and the upper 200 feet of the unnamed stream to which leachate was flowing.

Second, on May 27, 1987, EPA issued an Administrative Consent Order for construction of a waterline. About 50 residences within a half mile radius of the landfill have individual water supply wells. These residents have been provided with bottled water since 1983, initially by the landfill owner as a condition for allowing it to continue to operate, and since April 1987 by the state. A permanent alternative water supply is being installed under an agreement reached by the state, the borough of Naugatuck, and Uniroyal. The May 1987 Consent Order for the waterline between the three parties and EPA incorporates that agreement. The waterline is scheduled to be completed in 1988.

On May 19, 1988, EPA notified approximately 36 parties who either owned or operated the facility, generated wastes that were shipped to the facility, arranged for the disposal of wastes at the facility, or transported wastes to the facility of their potential liability with respect to the Site. EPA met with these potentially responsible parties (PRPs) on June 2, 1988, as a preliminary step toward settlement of the PRPs' liability at the Site.

Special notice will not be issued in this case until the remedy selection process is complete.

III. COMMUNITY RELATIONS

The local community has had an active presence throughout the history of the site. Two citizens' groups have been involved in attempts to close and cleanup the landfill. The Pollution Extermination Group, Inc. (PEG) has been active since 1981, originally to oppose expansion of the landfill. The Andrew Avenue Homeowners Association was formed in 1983 over concerns with the leachate collection system and methods of leachate disposal.

EPA has kept the community and other interested parties advised of the Site activities through informational meetings, fact sheets, press releases and public meetings.

In the summer of 1984 a roundtable meeting was held with EPA, CT DEP, PEG, Laurel Park, Inc., and Uniroyal.

In June 1985, EPA released the community relations plan for the Site which outlined a program to address community concerns and keep citizens informed about and involved in activities during remedial activities. (The community relations plan will be revised after the ROD is signed.)

On June 6, 1985, EPA held an informational meeting in the town to describe the plans for the Remedial Investigation and Feasibility Study.

On November 13, 1985, EPA held an informational public meeting to discuss the RI progress to date.

On February 26, 1987, EPA held an informational public meeting to discuss and respond to questions concerning the results of the Remedial Investigation and the Endangerment Assessment. On May 11, 1988, EPA held an informational public meeting to discuss the cleanup alternatives presented in the Feasibility Study and to present the Agency's Proposed Plan. The Agency also answered questions from the public during this meeting. From May 12 to June 9, the Agency held a four week public comment period to accept comment on the alternatives presented in the Feasibility Study, the Proposed Plan, and all other documents previously released to the public. During that comment period, on May 25, 1988, the Agency held a public hearing to accept oral comments. A transcript of this meeting together with the written comments received and the Agency's response to these comments, are included in the Administrative Record. After the ROD is signed EPA will publish notice of its decision in a local paper.

IV. SCOPE AND ROLE OF RESPONSE ACTION

The selected remedy was developed by combining components of different source control technologies and management of migration (or ground water) technologies to obtain a comprehensive approach for site remediation. The remedy provides for source control and management of migration by combining the following components: capping the landfill in accordance with RCRA; leachate collection; shallow ground water extraction to the bottom of the weathered/highly fractured bedrock zone; conveyance of leachate and extracted ground water by the municipal sewer system for treatment at the Naugatuck Water Pollution Control Facility; and long-term monitoring.

V. SITE CHARACTERISTICS

Chapter one of the Feasibility Study, and chapter two of the Endangerment Assessment, contain an overview of the Remedial Investigation. The significant findings of the Remedial Investigation are summarized below.

A. Hydrogeology

Hydrogeologic investigations were conducted at the landfill under the DEP mandated program and during the RI to characterize ground water flow and contaminant transport. Additionally, an evaluation of the existing leachate collection system was conducted during the FS, and completed in January 1988. These studies show that the landfill is directly underlain by fractured bedrock with the depth to bedrock varying from zero (0) to approximately seventy (70) feet below the land surface, around the perimeter of the landfill. In general, the upper surface of the bedrock is fairly weathered and fractured, with the depth of this upper fractured zone varying from approximately one (1) to thirty (30) feet into bedrock. On average the fractured zone is approximately twenty (20) feet. (Throughout this document this upper fractured bedrock zone is referred to as "shallow bedrock".) This zone is underlain by denser bedrock intermittently fractured by two fracture sets.

Ground water flow through bedrock at the Laurel Park site is controlled by the orientation and density of fractures. Given this, the shallow bedrock has been identified as the primary migration pathway, with the deeper bedrock as the secondary migration pathway. Ground water flow at the site has been identified toward the northwest, northeast, and the southeast

In order to quantify and delineate the vertical and horizontal extent of ground water contamination, monitoring wells were installed. Wells were installed in the till, the bedrock, and the fill. In addition, private supply wells located in the bedrock were also monitored. Contaminants have been detected in both on-site and off-site wells. Beyond the boundary of the landfill contaminants are found in the ground water in both the till and bedrock formations. Contamination is consistently detected in the shallow fractured bedrock. At greater depth the presence of contamination is sporadic and does not allow for delineation. This situation is common for fractured bedrock systems in New England.

Information on contaminant migration to the northwest, northeast, and southeast is presented in the RI. Contamination migration is apparent from the landfill in a north-northwesterly direction in association with the unnamed stream. Contaminant transport to the northeast is presumed to be along the secondary joint sets. Contaminants have been found to the southeast and are presumed to have been transported along the primary fracture set.

Contaminants present included organic and inorganic compounds. Table 2-3 from the Endangerment Assessment (Attachment 2) lists the chemicals detected in all media, including ground water. The frequency of detection versus the total number of samples analyzed is reported as well as the minimum, maximum and representative concentrations.

B. Surface Water and Sediment

The Laurel Park landfill straddles the surface water divide between the watersheds of Long Meadow Pond Brook and Spruce Brook, which both flow to the Naugatuck River. Most of the surface drainage from the landfill flows into the Long Meadow Pond Brook watershed via the unnamed stream.

Samples of surface water and sediments were collected from the unnamed stream, Long Meadow Pond Brook, and Spruce Brook. Surface water contamination is evident near the Laurel Park, Inc. landfill. The unnamed stream is a receptor of leachate and surface water runoff from the landfill. Volatile organic compounds (VOCs) were found in high levels at the site near the overflowing manhole, as evidenced by benzene concentrations in excess of 800 ppb. VOCs generally decrease in concentration downstream from the site due to dilution and volatilization. Migration of N-nitrosodiphenyl and diethylphthalate in the unnamed stream can be linked to this site; these compounds are found in leachate samples at higher concentrations than detected in surface water samples downstream. Whether site contaminants are migrating to Spruce Brook is unclear from the RI data.

C. Leachate and Soils

Leachate, generated by precipitation percolating into the landfill and contacting wastes, currently enters both the ground water and surface water flow regimes. Leachate dynamics are somewhat affected by an existing leachate collection system which Laurel Park, Inc. constructed in 1984.

The leachate collection has not been connected to the municipal sewer system, as intended, pending authorization to discharge to the system. As a result, leachate overflows from one manhole and enters the unnamed stream.

Leachate is contaminated with a number of organic compounds, including benzene, toluene, acetone, 2-butanone, N-

Leachate is contaminated with a number of organic compounds, including benzene, toluene, acetone, 2-butanone, N-nitrosodiphenylamine, diethylphthalate and phenolic compounds. Inorganics include the following heavy metals: aluminum, barium, calcium, cadmium, chromium, copper, iron, lead, magnesium, manganese, nickel, sodium, and zinc.

Soil investigations were limited to on-site leachate seep areas and to areas which received runoff from the landfill or runoff from leachate seeps. Soil contamination from leachate is evident. Volatile organic compounds such as benzene, toluene and xylenes, as well as the semi-volatile N-nitrosodiphenylamine are present at levels consistent with those found in leachate, while acetone and 2-butanone were detected in one sample at concentrations an order of magnitude higher than those found in leachate. Metals detected in on-site soil were generally higher than those detected in leachate, indicative of the tendency of metals to adsorb to soils.

D. Landfill

The landfill has an areal extent of approximately 19 acres. The volume of fill material and contaminated soils is estimated to be 1.3 million cubic yards, with a maximum depth of 120 feet. Although the landfill was actively receiving waste during the RI, it is presently covered by a soil cap.

Portions of the landfill are within the water table. The existing leachate collection system is only partially effective in capturing leachate.

Preliminary air monitoring indicated the presence of methane in significant quantities throughout the landfill. Except in the vicinity of leachate seeps, preliminary monitoring failed to detect volatilized organics at greater than background levels.

VI. SUMMARY OF SITE RISKS

An Endangerment Assessment (EA) was performed to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to contaminants associated with the site. The following twelve contaminants of concern were selected for evaluation in the EA:

Potential Carcinogens

- Arsenic
- Benzene
- Benzo(a)pyrene
- Bis-2-ethylhexyl phthalate
- Chloroform
- Chromium
- 1,2-Dichloroethane
- Nickel
- N-nitrosodiphenylamine
- Tetrachloroethylene

Noncarcinogens

- Lead
- Toluene

These contaminants constitute a representative subset of the more than fifty contaminants identified at the Site during the Remedial Investigation. The twelve contaminants were selected to represent potential onsite hazards based on toxicity, level of contamination, mobility and persistence in the environment.

Potential human health effects associated with the contaminants of concern in ground water, surface water, soils, and sediment were estimated quantitatively through the development of several hypothetical exposure scenarios. Incremental lifetime cancer risks and a measure of the potential for noncarcinogenic adverse health effects were estimated for the various exposure scenarios. Exposure scenarios were developed to reflect the potential for exposure to hazardous substances based on the characteristic uses and location of the site.

A comparison of the estimated risk level for drinking water use to that associated with showering and bathing indicates that the use of the ground water as a source of drinking water has the greater potential for presenting a hazard to health. It should also be noted that the risk levels developed included conservative assumptions which tend to overstate the risk, and that risk levels are of limited value in predicting absolute levels of risk.

Contact with surface water and sediment was determined to constitute a relatively minor exposure pathway, based upon containment concentrations and frequency of use.

Soil ingestion was also evaluated, specifically habitual soil consumption by small children. Conservative assumptions were also incorporated in this evaluation, including five years of daily access to soil on the property and daily ingestion of 5 grams of soil. The estimated risk level was determined to be low relative to that obtained from the analysis of drinking water use of the ground water.

In conclusion, the consumption of ground water from monitoring wells on the property and residential wells in the vicinity of the site holds the greatest potential for human health hazard and must be considered in the development of site remediation alternatives.

An endangerment to the environment is the potential degradation of the bedrock aquifer. The environmental consequences on two tributaries of the Naugatuck River, Long Meadow Pond Brook and Spruce Brook, which may be influenced either directly or via the unnamed stream were evaluated. At this time, water quality downstream of the landfill appears not to be significantly affected relative to established water quality criteria.

VII. DOCUMENTATION OF SIGNIFICANT CHANGES

EPA published a proposed plan (preferred alternative) for remediation of the site on May 3, 1988. Since that time, no significant changes have been made to the selected alternative.

VIII. DEVELOPMENT AND SCREENING OF ALTERNATIVES

A. Statutory Requirements/Response Objectives

Prior to the passage of the Superfund Amendments and Reauthorization Act of 1986 (SARA), actions taken in response to releases of hazardous substances were conducted in accordance with the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, dated November 20, 1985. Until the NCP is revised to reflect SARA, the procedures and standards for responding to releases of hazardous substances, pollutants and contaminants shall be in accordance with Section 121 of CERCLA and to the maximum extent practicable, the current NCP.

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that EPA's remedial action, when complete, must comply with applicable or relevant and appropriate environmental standards established under federal and state environmental laws unless a statutory waiver is granted; a requirement that EPA select a remedial action that is cost-effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a statutory preference for remedies that permanently and significantly reduce the volume, toxicity or mobility of hazardous wastes over remedies that do not achieve such results through treatment. Response alternatives were developed to be consistent with these Congressional mandates.

A number of potential exposure pathways were analyzed for risk and threats to public health and the environment in the Endangerment Assessment. Guidelines in the Superfund Public Health Evaluation Manual (EPA, 1986) regarding development of design goals and risk analyses for remedial alternatives were used to assist EPA in the development of response actions. As a result of these assessments, remedial response objectives were developed to mitigate existing and future threats to public health and the environment. These response objectives are:

Source Control Measures

1. Preventing or minimizing the further release of contaminants from the landfill to ground water, surface water, sediments, soils and air.

2. Eliminating the threats posed to human health and the environment from the source area itself.

Management of Migration Measures

1. Preventing or minimizing further migration of contaminants in ground water, surface water, sediments, soils and air.

2. Eliminating or minimizing the threats posed to human health and the environment from the current extent of contamination.

B. Technology and Alternative Development and Screening

CERCLA, the NCP, and EPA guidance documents including, "Guidance on Feasibility Studies Under CERCLA" dated June 1985, and the "Interim Guidance on Superfund Selection of Remedy" [EPA Office of Solid Waste and Emergency Response (OSWER)], Directive No. 9355.0-19 (December 24, 1986), set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements and guidance documents, treatment alternatives were developed for the site ranging from an alternative that, to the degree possible, would eliminate the need for long-term management (including monitoring) at the site to alternatives involving treatment that would reduce the mobility, toxicity, or volume of the hazardous substances as their principal element. In addition to the range of treatment alternatives, a containment option involving little or no treatment and a no-action alternative were developed in accordance with Section 121 of CERCLA.

Section 121(b)(1) of CERCLA presents several factors that at a minimum EPA is required to consider in its assessment of alternatives. In addition to these factors and the other statutory directives of Section 121, the evaluation and selection process was guided by the EPA document "Additional Interim Guidance for FY '87 Records of Decision" dated July 24, 1987. This document provides direction on the consideration of SARA cleanup standards and sets forth nine factors that EPA should consider in its evaluation and selection of remedial actions. The nine factors are:

1. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs).

2. Long-term Effectiveness and Permanence.

3. Reduction of Toxicity, Mobility or Volume.

4. Short-term Effectiveness.

5. Implementability.

6. Community Acceptance.

7. State Acceptance.

8. Cost.

9. Overall Protection of Human Health and the Environment.

Chapter 2 of the Feasibility Study identified, assessed and screened technologies based on site and waste-limiting characteristics, as well as technical reliability and effectiveness. These technologies were combined to encompass both source control and management of migration remedial response objectives. Chapter 2 (Section 2.4) in the Feasibility Study presented the remedial alternatives, developed by combining the technologies identified in the previous screening process, in the categories required by OSWER Directive No. 9355.0-19. The purpose of the initial screening was to narrow the number of potential remedial actions for further detailed analysis while preserving a range of options. Each alternative was then evaluated and screene in Chapter 3 of the Feasibility Study based on its effectiveness in protecting public health. In summary, of the eleven alternatives screened in Chapter 3, seven were retained for detailed analysis.

IX. DESCRIPTION/SUMMARY OF THE ANALYSIS OF ALTERNATIVES

This section presents a narrative summary and brief evaluation of each alternative according to the evaluation criteria described above. A thorough description and evaluation of each alternative can be found in Chapter 4 of the Feasibility Study.

Alternative 1
No Action with Monitoring

Estimated Present Worth Cost: $1,712,500

The National Contingency Plan requires that a no action alternative be developed as a baseline for comparison with other remedial alternatives. Although no source or ground water controls will be implemented under this alternative, monitoring will be conducted for thirty years to track contaminant migration and to identify further impacts to public health and the environment. Additionally, as required by CERCLA at sites where any hazardous substances, pollutants or contaminants remain, a review of the site will occur every five (5) years.

Potential human health threats are identified in the Endangerment Assessment and include contact with wastes, contaminated soil and leachate on site, and contact or ingestion of contaminated water in the unnamed stream. Environmental threats include further degradation of the bedrock aquifer, continued degradation of the unnamed stream and Long Meadow Pond Brook, and volatilization of contaminants into the air. This alternative will not reduce any of these risks, and therefore may not be protective of human health and the environment. Additionally, this alternative does not comply with most ARARs.

Alternative 2
Cap, Leachate Collection/Groundwater Extraction, On-Site Treatment

Estimated Present Worth Cost: $24,182,550

This alternative provides for source control by capping according to the Resource Conservation and Recovery Act (RCRA) regulations, and for ground water control by collecting leachate and extracting shallow ground water to the shallow bedrock aquifer. This alternative also includes on-site treatment of leachate and contaminated ground water, discharge of the treated water to the Naugatuck River, and monitoring.

A cap will be constructed to cover all waste disposal areas. The existing leachate collection system will be upgraded and remain in operation, and will be supplemented by a shallow ground water extraction system consisting of a French drain and/or ground water extraction wells to the bottom of shallow bedrock.

On-site treatment of leachate and ground water will include the construction of a treatment plant at the site, and discharge of the treated water to the Naugatuck River via a dedicated pipe which would run directly from the site to the river, approximately one mile. A National Pollutant Discharge Elimination System (NPDES) permit, which is issued by the state, is required for the discharge to the river.

Monitoring will be conducted to track contaminant migration and to identify further impacts to public health and the environment. Additionally, as required by CERCLA at sites where any hazardous substances, pollutants or contaminants remain, a review of the site will occur every five (5) years.

The cap will cover all waste disposal areas, thereby eliminating any potential for exposure from contact with wastes, or from contact or accidental ingestion of leachate or contaminated soil. Capping provides the best short-term effectiveness as it eliminates direct human exposure to the wastes, leachate and contaminated soil in a relatively short time (two to three years). Capping the landfill will also reduce infiltration of water into the landfill, thereby reducing leaching of contaminants into ground water.

Leachate collection and ground water extraction will supplement the cap in reducing the migration of contaminants into ground water. This will be effective in the long term in minimizing further degradation of the bedrock aquifer. Leachate collection and ground water extraction are the most effective means of capturing ground water flow in the highly fractured shallow bedrock aquifer, although the complex hydrogeology makes it impossible to ensure complete capture of all contaminated ground water and leachate migrating from the site. Leachate collection and ground water extraction are the best available technologies for complying with the 1) RCRA Ground Water Protection Standard, 2) the EPA Ground Water Strategy, and the 3) CT Ground Water Classification Program. Leachate collection and ground water extraction also reduce the toxicity, mobility, and volume of contamination affecting the groundwater, and use treatment to the maximum extent practicable at this site in achieving these goals.

Because leachate and contaminated ground water will be treated and discharged to the Naugatuck River under this alternative, improvement in the quality of the unnamed stream and Long Meadow Pond Brook would be expected soon after closure.

This alternative is similar to Alternative 3 in many respects, the principal difference is on-site treatment of leachate and extracted ground water. Implementation of this alternative involves construction of both a complete treatment system and a discharge pipe, whereas Alternative 3 requires construction of only a discharge pipe to the sewer system (and, if required, a pretreatment system). The complexity of the on-site treatment system creates a potential for operational mishaps. Operation and maintenance requirements for the system would be high due to its complexity. An operator would be required twenty-four hours per day. Potential risks to treatment plant operators are higher than in Alternative 3 because of the higher concentrations of contaminants in the water being treated. The treatment plant would produce up to 1,000 gallons per day of sludge that would require disposal off-site. If the sludge is determined to be hazardous waste it would require disposal at a RCRA facility.

Alternative 3
Cap, Leachate Collection/Groundwater Extraction, Off-site Treatment at the NWPCF

Estimated Present Worth Cost: $21,706,300, without pretreatment; $23,078,200, including pretreatment

The components of this alternative are the same as Alternative 2 (RCRA cap, existing leachate collection system, and shallow ground water extraction) except that leachate and contaminated ground water will be conveyed by the municipal sewer for treatment off-site at the Naugatuck Water Pollution Control Facility (NWPCF). To accomplish this a new sewer line would be constructed from the site to the Rubber Avenue interceptor. Treatment of leachate and ground water at the NWPCF will require complying with applicable pretreatment regulations and obtaining a pretreatment permit from the state. Pretreatment on site (if required by the pretreatment permit) will conform to those requirements.

Alternative 3 is the selected remedy. The rationale for selection is discussed in Chapter X.D below.

Alternative 4
Cap, Leachate Collection, and On-Site Treatment

Estimated Present Worth Cost: $19,108,000

Like Alternatives 2 and 3, this alternative provides for source control by capping according to RCRA regulations and leachate collection. However, this alternative does not include a ground water extraction system. Migration of contaminants from the landfill will continue in that portion of the aquifer not influenced by the existing leachate collection system. On-site treatment differs from that in Alternative 2 only in the decreased size of the components as flow rates are expected to be less without a ground water extraction system.

Because migration of contaminants from the landfill will continue in that portion of the aquifer not influenced by the leachate collection system, this alternative is not as protective of human health and the environment as Alternatives 2 and 3; involves less reduction of toxicity, mobility, and volume; is not as effective in the long term; and does not use treatment to the maximum extent practicable.

Alternative 5
Cap, Leachate Collection, and Off-site Treatment at the NWPCF

Estimated Present Worth Cost: $18,867,000

Like Alternative 4, this alternative provides for capping according to RCRA regulations and leachate collection. However, it does not include a ground water extraction system and, therefore, migration of contaminants from the landfill will continue in that portion of the aquifer not influenced by the leachate collection system. Like Alternative 4, this alternative is not as protective as Alternatives 2 and 3; involves less reduction of toxicity, mobility, and volume; is not as effective in the long term; and does not use treatment to the maximum extent practicable. Leachate is conveyed in the municipal sewer for treatment off-site at the NWPCF. Human health and environmental impacts from off-site treatment at the NWPCF are similar to those presented for Alternative 3.

Alternative 6
Excavation, On-Site Incineration, Ground Water Extraction, On-Site Treatment

Estimated Present Worth Cost: $347,444,000

This alternative involves the excavation of all wastes and contaminated soils and sediments from the Laurel Park landfill, followed by on-site incineration of the excavated material, and the disposal of ash and other residuals in a newly constructed on-site RCRA landfill. Ground water extraction and on-site treatment of contaminated ground water will also be provided with this alternative.

This alternative reduces toxicity, mobility, and volume to the greatest extent of all the alternatives, offers the most permanent solution, and involves the greatest use of treatment. However, the cost is exorbitant. In addition, this alternative will not be effective in the short term, as it is estimated that it will take twelve years to excavate and incinerate all the waste. The varying characteristics of the waste at the site limit the efficiency of the incinerator.

In addition, during the period of excavation and transportation of wastes for incineration, there is significant risk to on-site workers and nearby residents from exposure to contaminated soils, contaminated dust, volatilized organics, and incinerator ash being transported for disposal. Also, during the long excavation process, when wastes are relatively exposed to the environment, storm events may result in further releases. In addition, the incinerator will rely heavily upon emission control devices to prevent releases to the atmosphere. Releases may occur if these devices were to fail.

Excavation, incineration and construction of a new landfill require compliance with several parts of RCRA. Ground water extraction and treatment requirements will be the same as stated for Alternative 2.

[Alternatives 7 Through 10 were screened out in the FS]

Alternative 11
Cap, In-situ Biodegradation, Leachate Collection/Groundwater Extraction, and On-Site Treatment

Estimated Present Worth Cost: $28,482,000

This alternative would involve capping of the landfill as described in Alternative 2, leachate collection and shallow ground water extraction to the shallow bedrock aquifer, treatment of leachate and extracted water on-site, oxygen and microbial enrichment of the treated water, and finally reinjection of the enriched water back into the landfill.

Capping, leachate collection, ground water extraction, and on-site treatment offer the same environmental and human health protection as Alternative 2. The addition of in-situ biodegradation offers potentially greater environmental protection by increasing the rate of waste decomposition. However, extensive testing would be required to design the biodegradation process, and the effectiveness is unknown because results have not been demonstrated with diverse mixed wastes as are present here. In addition, reinfiltration of the treated water will increase the hydraulic head on the landfill, which could result in increased contaminant flow into the bedrock aquifer. This alternative does involve treatment of the source, but beneficial results of the biodegradation process are not expected to be seen for more than five years after implementation.

The following alternatives were screened out in Chapter 3 of the FS.

Alternative 7	Excavation, Incineration Off-site, Disposal of Residuals Off-site, Restoration of the Site
Alternative 8	Excavation, Disposal in On-site Landfill, Leachate Collection and Treatment, Restoration of the Site
Alternative 9	Excavation, Disposal in an Off-site RCRA Landfill, Restoration of the Site
Alternative 10	Soil Flushing, Leachate Collection, Ground Water Pumping, On-site Treatment

X. THE SELECTED REMEDY

The selected remedy, Alternative 3, is a comprehensive approach for site remediation which addresses the source and associated contaminant migration.

A. Description of the Selected Remedy

1. Cap

The objective of the cap (cover) is to reduce infiltration into the landfill so that 1) the generation of leachate is reduced, and 2) the water table is lowered such that it is below landfill material. An additional objective is to eliminate direct human exposure to wastes, contaminated soil, and leachate.

These objectives are expected to be achieved by designing a cap that complies with the Resource Conservation and Recovery Act (RCRA) landfill closure regulations. Detailed design criteria for the cap will be developed during remedial design to allow for the use of the most current materials and procedures appropriate for the specific conditions at the site. Capping will entail regrading to a maximum grade of 3:1 by filling with clean fill. The proposed conceptual cover design, as presented in the FS, will be a multimedia cap and will include provisions for gas collection and venting. In addition, a security fence will be erected around the perimeter of the landfill.

Maintenance of the cap so that there is no infiltration is critical to ensuring a reduction of leachate generation and to ensuring the dewatering of the landfill.

2. Existing Leachate Collection System

A perimeter leachate collection system exists at the landfill. This system was designed and constructed in 1983-1984 by Fred C. Hart Associates for Laurel Park, Inc. The existing leachate collection system will remain in operation; however, it will be rehabilitated and further evaluated during remedial design to determine if upgrading is required to improve its effectiveness.

3. Leachate Collection/Ground Water Extraction System

The objectives of the leachate collection/ground water extraction system are to:

- extract leachate not intercepted by the existing leachate collection system,

- extract highly contaminated shallow ground water to the bottom of the shallow bedrock in the immediate vicinity of the landfill, and

- supplement the cap in depressing the water table.

These objectives are expected to be achieved by means of the following design criteria:

- installing French drain and/or extraction wells to the bottom of the shallow bedrock zone (upper bedrock fractured zone), and

- developing depth and location specifics for the French drain and/or extraction wells during remedial design.

The proposed method for extracting leachate and contaminated ground water to the bottom of the shallow bedrock will be a combination of a French drain, and ground water extraction wells where the installation of the French drain is not possible. The benefits of each of these technologies will be considered in greater detail during the remedial design, and the actual design details, with regard to location and depth, will be determined and specified at that time. As conceptually proposed in the FS, the French drain system could consist of perforated pipe in a gravel envelope with the remainder of the trench backfilled with sand and gravel with a liner on the down gradient side of the trench. Water collected in the pipe will flow by gravity to sumps where it will be pumped to the surface. Extraction wells are presently proposed for use around the western side of the landfill where there is substantial overburden.

Leachate collection and ground water extraction are the most effective means of capturing ground water flow in the highly fractured shallow bedrock. While contaminant migration is not limited to this upper, fractured zone, the complex hydrogeology of the site makes it impossible to ensure complete capture of all contaminated ground water and leachate migrating from the site or to extract contaminated ground water in deep bedrock. It is therefore impossible to remediate the entire bedrock aquifer.

The objectives of the leachate collection/groundwater extraction system will be accomplished when all three of the following standards are achieved:

1. the RCRA Ground Water Protection Standard (GWPS) is met at the point of compliance;
2. the concentration standard, which is satisfied when the concentration of contaminants in the ground water has stabilized due to the reduced generation of leachate; and

3. the hydraulic standard, which is satisfied when the water table has been lowered below the waste and the generation of leachate has ceased or been reduced to a minimum due to dewatering of the landfill.

If during implementation of the remedy the hydraulic standard and concentration standard are achieved for a period of three years without achievement of the RCRA GWPS, then EPA will determine whether to modify the system to achieve the GWPS or take other appropriate action.

EPA cannot at this time predict when the leachate collection/ground water extraction system will fully accomplish its objectives until additional field work and design and implementation of the remedial action are accomplished. An estimate of the time that the system will be in operation will be made during design, and the determination whether the system has fully accomplished its goals will be made as specified in the previous paragraph. Quarterly monitoring will be necessary to determine whether the goals of the system have been achieved. This data may also be used as the basis for modification of the system or the time of its operation, or other appropriate action. It is also expected that to determine the hydraulic standard installation of one or more monitoring wells within the landfill may be required.

4. Treatment of Leachate and Contaminated Groundwater at the NWPCF

a. Conveyance Facilities

Leachate and extracted ground water will be discharged into the municipal sanitary sewer for treatment at the Naugatuck Water Pollution Control Facility (NWPCF). The Domestic Sewage Exclusion provides that a hazardous waste, when mixed with domestic sewage, is no longer a solid waste. Therefore, hazardous waste may be mixed with domestic sewage and sent to a publicly owned treatment work (POTW) which does not have a RCRA treatment, storage and disposal facility permit. Discharge of leachate and extracted ground water to the sanitary sewer will require compliance with applicable pretreatment regulations mandated in the pretreatment permit issued by the state.

Leachate and extracted ground water will be conveyed to the NWPCF in three distinct segments: Andrew Avenue (approximately 2,000 feet); the Rubber Avenue Interceptor (approximately 3,000 feet); and the Westside Interceptor (approximately 6,000 feet). A new sewer line will be constructed along Andrew Avenue from the landfill to the Rubber Avenue Interceptor and will be dedicated exclusively to leachate and extracted ground water from the landfill. There the leachate and extracted ground water will mix with sewage. The existing interceptors will be used to convey the leachate, diluted in the sewage, from there to the NWPCF.

b. Treatment at the NWPCF

Treatment processes at the NWPCF consist of screening, flow equalization, flocculation, sedimentation, disinfection, activated sludge treatment, sludge dewatering, and sludge incineration.

The estimated daily leachate and ground water flow from the landfill is approximately 20,000 gallons. The NWPCF is designed to treat 10.5 million gallons/day, while the current flow is 5.5 million gallons/day. The NWPCF is required to have an NPDES permit to discharge to the Naugatuck River and has a history of compliance with its permit. NPDES permits may be amended in the future to require effluent toxicity testing. In January 1988 the NWPCF had a bioassay analysis performed on its effluent, with results of 100% survival in 100% effluent concentration.

c. Pretreatment (If required)

CT DEP has informed EPA that both it and the Naugatuck Water Pollution Control Board have determined that pretreatment is not required before treatment of leachate and extracted ground water at the NWPCF. If required at some future point, pretreatment of the leachate and extracted ground water to a level acceptable for discharge to the NWPCF will be implemented at the landfill site.

5. Monitoring

The objectives of monitoring are:

- to monitor the effectiveness of the remedy - hydraulic and water quality end points,
- to monitor the bedrock aquifer relative to ground water standards and institutional controls. (At some point the bedrock aquifer is expected to be remediated due to natural degradation and dilution processes.), and
- to identify further impacts to public health and the environment.

The monitoring plan will be finalized during the remedial design and will address ground water, surface water/sediment, leachate, and air.

Additionally, as required by CERCLA at sites where any hazardous substances, pollutants or contaminants remain after completion of the remedy, a review of the site will occur every five (5) years.

B. Estimated Remedial Schedule

Record of Decision	June 1988
Negotiation with PRPs	August - December 1988
Remedial Design (1 to 1 1/2 years)	January 1989 - July 1990
Construction of Cap & Ground Water Extraction System (~3 years) Cap 2-3 yrs French drain 3 yrs Ext. Wells 1 yr	July 1990 - July 1993
Complete Remedial Action Construction	July 1993

Perimeter fencing and construction and operation of the Andrew Avenue sewer line are independent design and construction activities and may occur on an independent schedule.

C. Institutional Controls

EPA recommends to the State and the Borough that they implement or require institutional controls (e.g., regulations, ordinances, deed and land restrictions, or other effective forms of land use control) to prevent the use of the bedrock aquifer to supply private wells for any water purposes in the vicinity of the site in order to protect human health.

The use of ground water should be restricted for an indeterminate period of time, until it is determined conclusively that the ground water protection standards have been met. Restrictions on the use of ground water are a necessary public health precaution for two reasons: 1) existing contaminated ground water downgradient of the proposed extraction network will not be captured by the extraction system, and 2) because of the complex hydrogeology of the site, and the limitation of the ground water extraction system, capture of contaminated ground water migrating from the landfill will not be complete.

D. Rationale for Selection

The rationale for choosing the selected alternative is based on the assessment of each criterion listed in the evaluation of alternatives section of this document. In accordance with Section 121 of CERCLA, to be considered as a candidate for selection in the Record of Decision (ROD), the alternative must have been found to be protective of human health and the environment and able to attain ARARs, unless a waiver is granted. In assessing the alternatives that met these statutory requirements, EPA focused on the other evaluation criteria, namely: implementability, short term effectiveness, long term effectiveness, use of treatment to permanently reduce the mobility, toxicity and volume, and the cost. EPA also considered nontechnical factors that affect the implementability of a remedy, such as state and community acceptance. In addition, a number of site specific conditions at Laurel Park played a critical role in defining an appropriate remedy. These included:

- the location of the landfill on a hill,
- the close proximity of the waste to fractured bedrock, and
- the presence of a fractured bedrock aquifer with upper and lower zones.

Based on this assessment, and taking into account the statutory preferences of CERCLA, EPA selected the remedial approach for the site.

1. Cap

Capping, runoff collection and control, and gas collection and treatment are implementable remedies for the site. They are widely practiced methods for landfill closures and protection of ground water. Most materials necessary for closure should be readily available. Placement of cap layers is a fairly common practice, although care must be taken to ensure no damage to the synthetic liner occurs.

Proper implementation will require reducing side slopes where they are excessive, as well as protecting the cap from damage due to subsidence. Side slopes will be expanded using locally derived soil to meet the 3:1 slope guidelines of RCRA. Subsidence damage will be minimized by proper cap construction.

Capping is estimated to take between two to three years to implement. Capping eliminates direct human exposure to the wastes and contaminated soil in a relatively short time. Proper safety precautions, the relatively short duration of construction activities, and the minimal handling of landfill materials necessary during construction will minimize any risks from exposure to dust, volatile emissions, or contact with waste or leachate.

The major purpose of the impermeable cap is to dewater waste and reduce leachate generation, thus reducing ground water contamination. The cap is expected to be successful in achieving these results given the topographic location of the landfill. Improvements in ground water quality should be seen once the initial soil layer is in place, as infiltration will be significantly reduced. Materials chosen will have a life expectancy of greater than thirty (30) years.

Proper installation of the multimedia cap will ensure its effectiveness in preventing infiltration of surface water. Proper installation of the clay layer and synthetic membrane are key to ensuring the integrity of the system and promoting runoff away from the fill. Proper grading and maintenance of the final cover will minimize the amount of infiltration.

Periodic routine monitoring will detect differential settling of landfill materials. Although settlement cannot be controlled and could impair the liner, settlement damage is repairable.

Establishing and maintaining cover and side slope vegetation will prevent erosion that may lead to deterioration of the cap system.

Although the source will not be treated, and residual contamination in the landfill will remain in place, natural degradation processes will reduce the volume and toxicity of the remaining wastes. However, these processes are slow and contamination will persist in the landfill for an indefinite period of time.

2. Existing Leachate Collection System

Rehabilitation of the existing leachate collection system should improve its effectiveness, in capturing leachate and preventing its infiltration to ground water. Currently it is only partially effective in capturing leachate. After rehabilitation, and with subsequent periodic cleaning, the useful life of the system is expected to exceed thirty years.

3. Leachate Collection/Ground Water Extraction

The existing leachate collection system will be supplemented with a shallow ground water extraction program. The method for extracting contaminated ground water and leachate includes both a French drain into bedrock and ground water extraction wells. Details of implementation, location, and depth of the ground water extraction system will be determined during remedial design.

The geometry and lithology of the site in conjunction with the installation of the French drain and extraction wells will be successful in extracting leachate and highly contaminated ground water located in the vicinity of the landfill, and reducing further degradation of the bedrock aquifer.

The proposed French drain system is the most effective means of capturing leachate and contaminated ground water in the shallow bedrock aquifer due to the low transmissivity of the aquifer and the minimal recharge in the area. Lining the bottom of the trench and placing a geotextile liner above the gravel layer will increase effectiveness. Proper trenching procedures, including dewatering, will improve the reliability of the system. Periodic cleaning and inspecting will maintain the performance of the system.

The useful life of the French drain should exceed thirty years. Replacement of sump pumps would be expected once within this time period. With proper maintenance and inspection the system is expected to be very reliable and effective over its useful life.

Completion of the system and achievement of beneficial results should take approximately three years.

Installation of the French drain will involve fracture and excavation of rock. Trenching into rock in certain locations may prove difficult due to the depths of trenching required. Proper lining of the downgradient trench wall will contain migration resulting from increased permeability in the fractured zones because of fracturing of bedrock.

Installation of ground water extraction wells in areas where installation of the French drain is not possible is a common practice using readily available materials. The wells can be installed and achieve beneficial results in less than one year.

The performance of the extraction wells is dependent on the information gained during predesign hydrogeological studies. Based on the information available, the proposed wells will be effective only in the limited area where they are screened. Thus, they will limit contaminant migration only to a limited extent, and complete capture is not possible. Therefore, use of extraction wells will be confined to areas where installation of the French drain is not possible.

Proper installation of the wells and regular maintenance of the pumps and screens will insure the reliability of the wells. The low yields expected in the majority of the wells necessitates the use of pumps with water levels probes for on/off control and routine cleaning of the wells to ensure the integrity of the screens and insure continuous yield.

Use of stainless steel extraction wells and pumps should achieve a useful life of at least thirty years. If pumping is intermittent the useful life of pumps and screens will be shortened, possibly requiring replacement once during the life of the project. Proper maintenance of well pumps will ensure reliable operation.

4. Treatment of Leachate and Contaminated Ground Water at NWPCF

The NWPCF is designed to treat 10.5 million gallons per day of waste water and current average flows are 5.5 million gallons per day, providing 5 million gallons per day of available capacity. The NWPCF is in full operation. Implementation is straightforward; it will consist of constructing the sewer line to the Rubber Avenue Interceptor. Treatment of leachate and ground water at the NWPCF will be effective in both the short and long term. Studies show that the NWPCF treatment systems should significantly reduce the concentration of contaminants conveyed by the leachate and ground water. The NWPCF's continued compliance with its NPDES permit will assure its continued reliability and effectiveness in treating leachate and ground water.

Based on recent bioassay test data on the plant's effluent, the NWPCF is effective in treating the industrial and municipal waste waters it receives. The addition of leachate and groundwater from the Laurel Park site should not have a measurable effect on treatment efficiencies at the NWPCF.

The sewer pipe that will convey leachate to the NWPCF will be closed and residents' and transients' access to the pipe will be restricted; therefore the discharge of leachate and contaminated ground water to the sewer should not pose potential health risks to those groups. Any risk to sewer maintenance personnel who may enter the sewer are expected to be minimal when Occupational Safety and Health Administration (OSHA) procedures for confined space entry are followed.

There is some potential for volatilization of organic compounds at the NWPCF. The amount of volatilization that could occur at the plant depends on the concentrations of compounds present in the waste stream, the degree of pretreatment (if any) occurring on site, and the degree of volatilization en route to the plant. Concentrations of volatile organic compounds at the plant should be low due to the dilution of the leachate in the sewage. Therefore, any risks to treatment plant workers from inhalation of volatile organic compounds cannot easily be quantified, but are expected to be minimal if the plant is in compliance with OSHA ventilation standards. In contrast to Alternative 2, the risk to workers at the NWPCF is expected to be lower than at the on-site treatment plant, as a result of the dilution of contaminants in the domestic sewage.

Ground water contamination resulting from leakage during conveyance of leachate to the NWPCF, if any, should be insignificant. The proposed 6-inch diameter Andrew Avenue Interceptor will be new and should have virtually watertight joints. The Rubber Avenue and Westside sewers are only ten years old and are in good condition. When the leachate mixes with the sanitary sewage flow in the Rubber Avenue and Westside Interceptors, the relative concentrations of contamination will decrease more than 75-fold, even in the worst case scenario (i.e., peak leachate flow and minimum sanitary sewage flow). Even if there is exfiltration from the existing interceptors, the effect c the ground water should be negligible.

Although not required by the State at this time, if required at some future point, pretreatment will be easily implementable. Implementation will require some construction; however, the construction practices are straightforward. Since the units will be rather small based on flow, some of the units may be purchased directly from a manufacturer and installed instead of constructed at the site. Time required for installation, including design, construction and bench scale studies, is estimated to be one year. Following construction, beneficial results would be achieved immediately.

The reliability of the pretreatment system is expected to be good. Operation and maintenance requirements are manageable, and the useful life of these unit processes is estimated to be at least twenty years based on experience with their use at industrial wastewater treatment facilities.

XI. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the Laurel Park, Inc. Superfund Site is consistent with CERCLA and, to the extent practicable, the NCP.

A. The Selected Remedy is Protective of Human Health and the Environment

The remedy at this site will permanently reduce the risks presently posed to human health and the environment. Significant public health and environmental benefits are provided by constructing a multimedia cap on the Laurel Park landfill. The cap will cover all waste disposal areas, thereby eliminating any potential for exposure to humans from contact with wastes, or from contact or accidental ingestion of leachate or contaminated soils. Capping the landfill will also reduce infiltration of rainwater into the landfill, thereby reducing leaching of contaminants into ground water.

Leachate collection and ground water extraction will supplement the cap in reducing migration of contaminants into ground water, thereby minimizing further degradation of the bedrock aquifer. Discharge of leachate and contaminated ground water to the sewer will improve the quality of the unnamed stream and Long Meadow Pond Brook.

Any potential risks from conveyance of leachate to and treatment of leachate at the NWPCF should be minimal and are not expected to pose a threat to human health and the environment.

B. The Selected Remedy Attains ARARs

This remedy will meet or attain all applicable or relevant and appropriate federal and state requirements that apply to the site. Environmental laws which are applicable or relevant and appropriate to the selected remedial action at the Laurel Park, Inc. Superfund Site are:

Resource Conservation and Recovery Act (RCRA)
Clean Water Act (CWA)
Safe Drinking Water Act (SDWA)
Clean Air Act (CAA)

A brief narrative summary of the ARARs follows.

Capping of the Laurel Park landfill will result in compliance with

RCRA closure regulations (40 CFR Part 264, Subpart G and 40 CFR Section 264.310).

Thickness of cap layers and materials proposed for use in construction will meet or exceed RCRA guidelines. Post-closure care and maintenance will also be instituted as required under 40 CFR, Section 264.117 and 40 CFR Section 264.310(b).

The proposed grading plan for closure will comply with the RCRA regulations at 40 CFR Section 264.310 and 40 CFR Part 268 in that no wastes will be moved in attaining the required 3:1 slopes of the landfill.

Capping will result in gas build-up and the need for gas collection and/or venting. Testing of the emissions will be required to determine if emissions are in compliance with the Connecticut Air Standards. The CT DEP Hazardous Air Pollutant Regulations are adopted pursuant to CT General Statutes Title 22A-174 (Title 22A-174-5 refers to test methods, and Title 22A-174-29 presents the standards). If emissions do not meet the above standards treatment will be required.

Since surface drainage will be from clean soil, there is no need for a permit under the Clean Water Act, 33 U.S.C. 1151 et seq. (Connecticut water quality standards are also satisfied in this regard.) If required by the State, a water diversion permit must be obtained to alter the drainage pattern at the unnamed stream's head waters to compensate for the increased runoff expected to result from capping.

The relevant and appropriate requirements for the ground water extraction system (French drain and extraction wells) are the RCRA ground water protection regulations in 40 CFR Part 264, Subpart F. The RCRA regulations require attainment of a ground water protection standard (GWPS) at the point of compliance, which is the vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the unit. The GWPS under current regulations is set at the Maximum Contaminant Levels (MCLs), Alternate Concentration Limits (ACLs), or background. At the Laurel Park site ground water at the point of compliance currently exceeds levels that could be set as the GWPS. As a result, EPA has determined that corrective action (ground water extraction and source capping) is necessary in accordance with 40 CFR Section 264.100, which requires corrective action to ensure that the GWPS is attained. Monitoring to determine the system's effectiveness will be performed according to Section 264.100(d).

The EPA Ground Water Protection Strategy (EPA Office of Ground Water, August 1984) is a "to be considered" guidance. The strategy establishes ground water classification guidelines based on the policy that different ground waters merit different levels of protection. The aquifer at the Laurel Park Site is classified as a Class II ground water, ground water that is currently being used or may be used as a drinking water source in the future. EPA feels that the aquifer at the Laurel Park Site is a resource that should be protected from further degradation. Given the site conditions, the remedial action that is being selected will reduce the introduction of additional contamination into the bedrock aquifer and meet the intent of the ground water protection strategy.

The State of Connecticut has adopted a State Ground Water Classification Program under the CT Water Quality Standards pursuant to CT General Statues Section 22A-426 which is relevant and appropriate at the site. The state classifies the ground water at the Laurel Park Site as GB/GA, ground water that is currently known or presumed to be degraded, with a ground water quality goal of being potable without the need for pretreatment. The selected remedial action is in accordance with the state ground water classification goal.

The Domestic Sewage Exclusion (40 CFR Section 261.4(a)(1)) provides that a hazardous waste, when mixed with domestic sewage, is no longer considered a solid waste. Therefore, hazardous waste may be mixed with domestic sewage and sent to a publicly owned treatment works (POTW) which does not have a RCRA treatment, storage and disposal facility permit.

Discharge of leachate and extracted ground water to the sewer system will require compliance with all requirements of the pretreatment permit that will be issued by the Connecticut DEP and of the Naugatuck sewer ordinance. If required by the pretreatment permit once it is issued, as well as any time in the future, the leachate must be pretreated on-site prior to discharge.

The NWPCF is required to have an NPDES permit to discharge to the Naugatuck River, and has a history of compliance with its NPDES permit.

Monitoring of environmental media for 30 years will comply with RCRA ground water monitoring requirements under 40 CFR Part 264, Subpart F.

All of the above are relevant and appropriate, except the pretreatment permit, which is applicable, and the RCRA guidelines and Ground Water Protection Strategy, which are "to be considered."

C. The Selected Remedy is Cost Effective

Once EPA has identified alternatives that are protective and attain ARARs, unless a waiver is granted, EPA analyzes those alternatives to determine a cost-efficient means of achieving the cleanup.

Each of the alternatives underwent a detailed cost analysis to develop costs to the accuracy of -30 to +50 percent. In that analysis, capital and operation and maintenance costs were estimated and then used to develop present worth costs. In the present worth analysis, annual costs were calculated for thirty years (estimated life of an alternative) using a ten percent interest rate factor and were based on 1987 costs.

The preferred remedy is cost effective. The three alternatives estimated to cost less than the preferred remedy are less protective or otherwise unacceptable: the no action alternative provides little protection and does not meet ARARs; and alternatives 4 and 5 do not provide ground water extraction are therefore not as protective.

D. The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable for this site. For source control, complete and partial removal or excavation were considered, as well as in-situ biodegradation. Permanent solutions and resource recovery technologies that would be applicable to the waste types found at the Site require complete or partial excavation. Both were found to be impracticable.

Complete excavation is outlined in Alternative 6. Besides being cost prohibitive, it is also ineffective in the short term. The large volume of waste that would require excavation, estimated at 1.3 million cubic yards, would require twelve years to excavate and incinerate. During this period on-site workers and others could have significant exposure from inhalation of volatilized organics and contaminated dust, or from contact with wastes and contaminated soils.

Excavation and removal or treatment of selected areas (or "hot spots") of the landfill was also considered. During the FS a survey of state records, aerial photographs, photographic slides, and interviews with area residents and state officials indicate i is very unlikely that discrete areas of contamination could be distinguished. Historical records show that codisposal of hazardous materials, whether in drums or from liquid tankers, with municipal waste and construction debris occurred throughout the operating life of the site. Pits which contained liquids were normally reworked making it unlikely that discrete pockets of waste remain.

In-situ biodegradation is outlined in Alternative 11. This was the only alternative treatment technology that passed the screening. It was found to be unacceptable because reinfiltration of the treated water will increase the hydraulic head on the landfill, which could result in increased leachate generation and flow into the bedrock aquifer; extensive testing would be required to design the biodegradation process; and the effectiveness is unknown because results have not been demonstrated with diverse mixed wastes as are present here.

E. The Selected Remedy Does Not Satisfy the Preference for Treatment as a Principal Element

Treatment is not the primary element of this remedy, as the source material will not be treated. As stated above, treatment of the source material is either impracticable, involves unacceptable risks to workers and others, is not cost-effective, or is insufficiently protective. Treatment of leachate and contaminated ground water will occur at the NWPCF, and represents the maximum extent to which treatment is practicable.

XII. STATE ROLE

The Connecticut Department of Environmental Protection has reviewed the various alternatives and has indicated its support for the selected remedy. The State has also reviewed the Remedial Investigation, Endangerment Assessment and Feasibility Study to determine if the selected remedy is in compliance with applicable or relevant and appropriate State environmental laws and regulations. The State of Connecticut concurs with the selected remedy for the Laurel Park, Inc. Site. A copy of the declaration of concurrence is attached as Appendix C.

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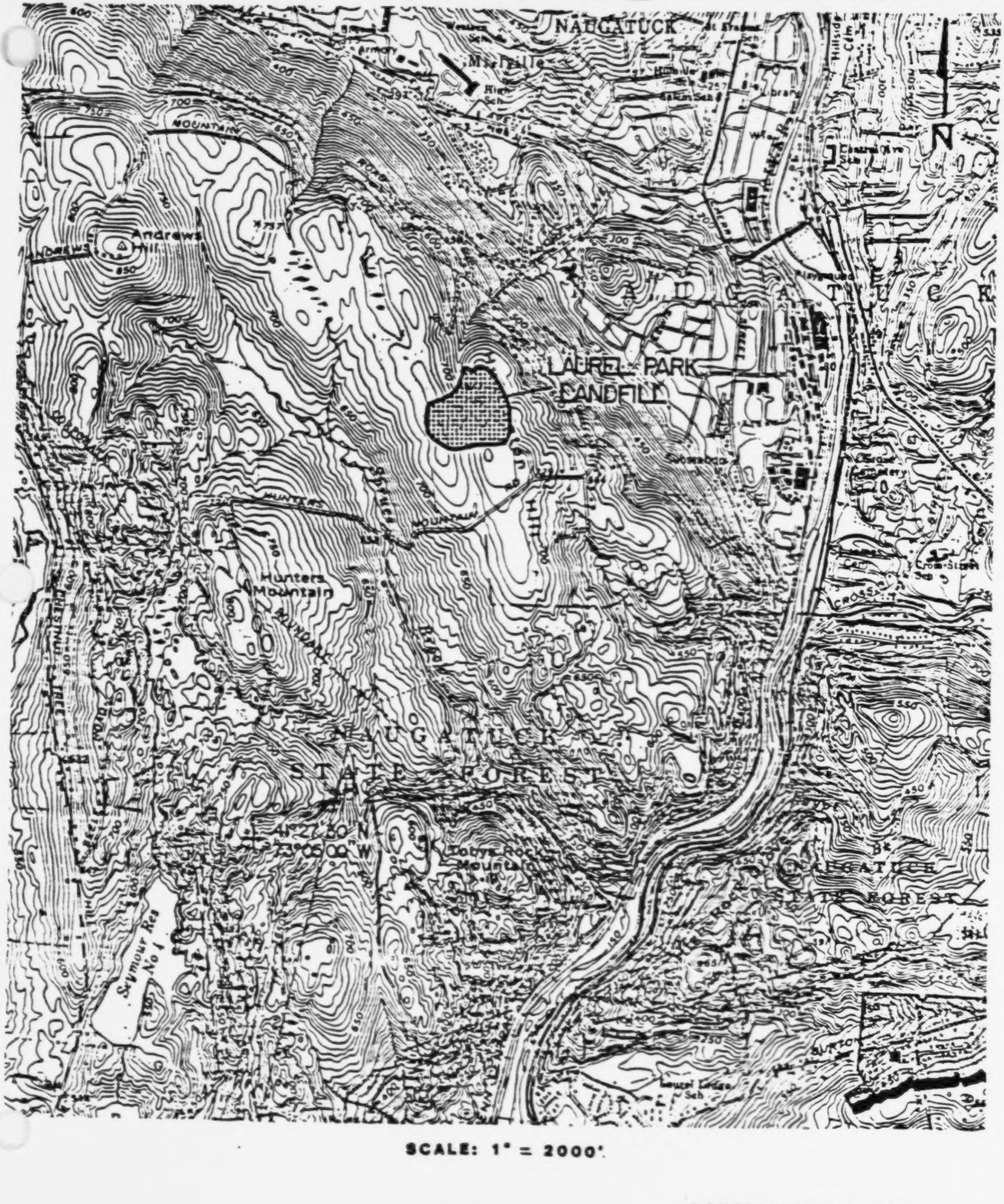
FIGURE 1-1


NAUGATUCK
LAUREL PARK
LANDFILL
Andrews Hill
Hunters Mountain
NAUGATUCK
STATE FOREST
Seymour Res No 1
41°27'30" N
73°05'00" W
N

SCALE: 1" = 2000'

MALCOLM
PIRNIE

LAUREL PARK LANDFILL
NAUGATUCK, CONNECTICUT

LOCATION MAP

TABLE 2-3

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

	Groundwater			Surface Water		
Compound	Frequency	Range (ug/L)	Mean (ug/L)	Frequency	Range (ug/L)	Mean (ug/L)
Metals						
Aluminum	22/30	130-5,600	702	3/5	170-327	142
Antimony	0/57		ND	0/4		ND
Arsenic	2/30	7-11	0.6	1/4	6	2
Barium	10/30	14-1,610	95	2/5	17-19	7
Beryllium	0/57		ND	0/4		ND
Cadmium	6/246	6-66	0.4	0/16		ND
Calcium	30/30	3,300-325,000	62,779	5/5	14,000-40,600	21,512
Chromium	16/157	10-87	3	4/21	10-34	4
Cobalt	3/30	64-98	8			ND
Copper	60/140	1-650	43	5/8	20-90	25
Iron	127/246	20-429,000	1,770	15/21	40-23,000	3,124
Lead	43/249	1-1,520	79	2/21	780-820	76
Magnesium	11/30	290-26,500	2,150	3/5	2,150-12,200	3,456
Manganese	124/246	7-212,000	696	17/21	20-4,290	856
Mercury	0/57		ND	0/4		ND
Nickel	12/87	20-100	6	3/4	20-60	28
Potassium	21/30	2,000-410,000	43,481	3/5	2,800-22,100	5,760
Selenium	0/57		ND	0/4		ND
Silver	0/57		ND	0/4		ND
Sodium	223/246	1,300-830,000	49,948	17/21	4,000-605,000	92,321
Thallium	0/57		ND	0/4		ND
Zinc	97/164	8-820	94	10/17	10-549	70
Cyanide	5/87	10-20	0.9	0/4		ND
Total Phenols	18/148	60-3,410	87	9/10	180-1,200,000	191,682

Note: ND = not detected

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Groundwater Frequency	Groundwater Range (ug/L)	Groundwater Mean (ug/L)	Surface Water Frequency	Surface Water Range (ug/L)	Surface Water Mean (ug/L)
Volatile Organics						
Acetone	8/30	2-770	84	3/12	8-39	5
Acrolein	0/57		ND	0/4		ND
Acrylonitrile	0/56		ND	0/4		ND
Benzene	41/244	<1-8,700	59	6/18	2-57.7	10
Bis (chloromethyl) ether	0/56		ND	0/4		ND
Bromoform	0/56		ND	0/4		ND
2-Butanone	5/30	<1-14	0.8	8/12	3-73	9
Carbon disulfide	1/30	6	0.2			
Carbon tetrachloride	0/37		ND	0/14		ND
Chlorobenzene	6/204	<3-32	0.5	0/14		ND
Chlorodibromomethane	0/57		ND	0/4		ND
Chloroethane	2/87	<8-<15	0.3	0/4		ND
2-Chloroethylvinyl ether	0/57		ND	0/4		ND
Chloroform	11/87	<1-30	1	0/4		ND
Dichlorobromomethane	0/57		ND			
1,1-Dichloroethane	6/192	<1-8.8	0.2	1/16	<2	0.1
Dichlorodifluoromethane	1/162	11	0.1			
1,2-Dichloroethane	3/192	21-9,680	76			
1,1-Dichloroethylene	1/87	6	0.07	1/16	5	0.3
1,2-Dichloropropane	1/214	29.2	0.1	0/18		ND
cis-1,3-Dichloropropylene	0/57		ND	0/4		ND
Ethyl benzene	12/243	<1-992	15	4/18	8-16.7	3
Methyl bromide	0/57		ND	0/4		ND
Methyl chloride	0/109		ND	1/10	10	1

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Groundwater			Surface Water		
	Frequency	Range (ug/L)	Mean (ug/L)	Frequency	Range (ug/L)	Mean (ug/L)
Volatile Organics (Cont'd)						
Methylene chloride	5/243	3-3,340	10	7/28	8-39	5
1,1,2,2-Tetrachloroethane	0/57		ND	0/4		ND
Tetrachloroethylene	3/214	18.1-187	2	0/18		ND
Toluene	22/243	2-11,000	114	2/18	16-22.5	2
1,2-Dichloroethane	2/214	11-12	0.1	1/12	<3	0.2
trans-1,2-Dichloroethylene				0/16		ND
1,1,1-Trichloroethane	2/214	3-8.6	0.1	1/18	3	0.2
1,1,2-Trichloroethane	0/214		ND	0/4		ND
Trichloroethylene	0/214		ND	2/12	7-120	11
Trichlorofluoromethane	0/214		ND	0/18		ND
Vinyl chloride	2/243	1-14	0.1	0/18		ND
trans-1,3-Dichloropropylene	0/57		ND	0/4		ND
Xylenes	10/30	<2-63	5			
4-Methyl-2-pentanone	2/30	8-11	0.7			
Base Neutrals						
Acenaphthene	0/91		ND	0/4		ND
Acenaphthylene	0/91		ND	0/4		ND
Anthracene	0/91		ND	0/4		ND
Benzidine	0/91		ND	0/4		ND
Benzo(a)anthracene	0/91		ND	0/4		ND
Benzo(a)pyrene	1/121	<5	0.04	1/16	<6	0.4

MALCOLM
PIRNIE

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Groundwater			Surface Water		
	Frequency	Range (ug/L)	Mean (ug/L)	Frequency	Range (ug/L)	Mean (ug/L)
Base Neutrals (Cont'd)						
Benzo(b)fluoroanthene	0/91		ND	0/4		ND
Benzo(ghi)perylene	0/91		ND	0/4		ND
Benzo(k)fluoroanthene	0/91		ND	0/4		ND
bis (2-Chloroethoxy) methane	0/91		ND	0/4		ND
bis (2-Chloroethyl) ether	4/248	2.3-10	0.1	0/18		ND
bis (2-Chloroisopropyl) ether	0/91		ND	0/4		ND
bis (2-Ethylhexyl) phthalate	17/192	<1-1,600	10	2/22	<1-3	0.2
4-Bromophenyl phenyl ether	0/91		ND	0/4		ND
Butyl benzyl phthalate	0/91		ND	0/4		ND
2-Chloronaphthalene	0/91		ND	0/4		ND
4-Chlorophenyl phenyl ether	0/91		ND	0/4		ND
Chrysene	0/91		ND	0/4		ND
Dibenzo(a,h)anthracene	0/91		ND	0/4		ND
1,2-Dichlorobenzene	0/91		ND	0/4		ND
1,3-Dichlorobenzene	0/91		ND	0/4		ND
1,4-Dichlorobenzene	0/91		ND	0/4		ND
3,3'-Dichlorobenzidine	0/91		ND	6/30	<5.4-25	3
Diethyl phthalate	4/249	<1.6-19	0.2	0/4		ND
Dimethyl phthalate	0/91		ND	0/4		ND
Di-n-butyl phathalate	0/91		ND	0/4		ND
2,4-Dinitrotoluene	0/91		ND	0/4		ND
2,6-Dinitrotoluene	0/81		ND	0/4		ND

40

TABLE 2-
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

	Groundwater			Surface Water		
Compound	Frequency	Range (ug/L)	Mean (ug/L)	Frequency	Range (ug/L)	Mean (ug/L)
Base Neutrals (Cont'd)						
Di-n-octyl phthalate	0/91		ND	1/16	17	1
1,2-Diphenylhydrazine	0/91		ND	0/4		ND
Fluoranthene	0/91		ND	0/4		ND
Fluorene	0/91		ND	0/4		ND
Hexachlorobenzene	0/91		ND	0/4		ND
Hexachlorobutadiene	0/91		ND	0/4		ND
Hexachlorocyclopentadiene	0/91		ND	0/4		ND
Hexachloroethane	0/91		ND	0/4		ND
Ideno(1,2,3-c,d)pyrene	0/91		ND	0/4		ND
Isophorone	11/121	<1-<8	0.4	0/4		ND
Naphthalene	4/192	<1-4.4	0.1	0/10		ND
Nitrobenzene	0/162		ND	0/10		ND
N-nitrosodimethylamine	0/91		ND	0/4		ND
N-nitrosodi-n-propylamine	0/91		ND	0/4		ND
N-nitrosodiphenylamine	10/247	<1.5-3,400	35	13/30	14.3-590	43
Phenathrene	3/143	5.6-10.7	0.2	0/8		ND
Pyrene	2/91	5-5.1	0.1	0/4		ND
1,2,4-Trichlorobenzene	0/91		ND	0/4		ND
Acid Extractables						
2-Chlorophenol	0/57		ND	0/4		ND
2,4-Dichlorophenol	1/133	13,900	104	0/4		ND
2,4-Dimethylphenol	2/133	8.5-1,160	9	0/4		ND

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Groundwater			Surface Water		
	Frequency	Range (ug/L)	Mean (ug/L)	Frequency	Range (ug/L)	Mean (ug/L)
Acid Extractables (Cont'd)						
4,6-Dinitro-o-cresol	0/57		ND	0/4		ND
2,4-Dinitrophenol	0/57		ND	0/4		ND
2-Nitrophenol	0/57		ND	0/4		ND
4-Nitrophenol	0/57		ND	0/4		ND
p-Chloro-m-cresol	0/57		ND	0/4		ND
Pentachlorophenol	0/57		ND	0/4		ND
Phenol	2/57	4-1,830	32	0/4		ND
2,4,6-Trichlorophenol	1/133	1,040	8	0/4		ND
Dioxin						
2,3,7,8-TCDD (ng/l)	0/87		ND	0/8		ND
OCDD (ng/l)	104/152	0.03-10.6	0.3	8/11	0.07-0.61	0.2

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

	Leachate		
Compound	Frequency	Range (ug/L)	Mean (ug/L)
Metals			
Aluminum	7/7	4,200-479,000	18,666
Antimony	0/1		ND
Arsenic	3/8	8-390	53
Barium	7/7	140-5,850	1,985
Beryllium	2/8	5-21	3
Cadmium	8/12	5.6-217	27
Calcium	7/7	130,000-1,080,000	525,200
Chromium	10/12	11-1,250	117
Cobalt	5/7	93-681	171
Copper	7/8	30-2,090	202
Iron	12/12	5,440-1,530,000	495,648
Lead	8/12	23.5-4,280	501
Magnesium	7/7	32,000-288,000	122,671
Manganese	12/12	1,400-44,000	10,804
Mercury	1/8	1.5	0.2
Nickel	7/8	80-1,300	225
Potassium	7/7	7,020-510,000	210,317
Selenium			
Silver	1/8	46	6
Sodium	12/12	212,000-2,170,000	690,771
Thallium	0/1		ND
Vanadium	6/7	81-1,230	454
Zinc	12/12	10-15,700	2,154
Cyanide	1/8	43	5
Total Phenols	1/1	240	240

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Leachate Frequency	Leachate Range (ug/L)	Leachate Mean (ug/L)
Volatile Organics			
Acetone	7/7	100-6,400	2,729
Acrolein	0/1		ND
Acrylonitrile	0/1		ND
Benzene	10/12	<3-1,300	390
Bis (chloromethyl) ether	0/1		ND
Bromoform	0/1		ND
2-Butanone	4/7	60-5,500	116
Carbon tetrachloride	0/5		ND
Chlorobenzene	5/12	8-72	21
Chlorodibromomethane	0/1		ND
Chloroethane	2/8	<14-50	8
2-Chloroethylvinyl ether	0/1		ND
Chloroform	1/1	14	14
Dichlorobromomethane	0/1		ND
1,1-Dichloroethane	5/12	12-260	32
Dichlorodifluoromethane	0/5		ND
1,2-Dichloroethane	2/8	12-1,300	164
1,1-Dichloroethylene	1/8	5	0.6
1,2-Dichloropropane	0/5		ND
cis-1,3-Dichloropropylene	0/1		ND
Ethyl benzene	7/12	<1-240	92
Methyl bromide	0/1		ND
Methyl chloride	1/1	16	16

TABLE
(Conti[illegible])

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Leachate Frequency	Leachate Range (ug/L)	Leachate Mean (ug/L)
Volatile Organics (Cont'd)			
Methylene chloride	2/5	120-4200	108
1,1,2,2-Tetrachloroethane	0/1		ND
Tetrachloroethylene	0/5		ND
Toluene	10/12	<1-520	117
1,2-dichloroethane			
1,2-dichloroethylene	1/5	6	1
1,1,1-Trichloroethane	1/5	9	2
1,1,2-Trichloroethane	0/1		ND
Trichloroethylene	0/5		ND
Trichlorofluoromethane	1/5	6	1
Vinyl Chloride	1/5	20	4
Trans-1,3-dichloropropylene	0/1		ND
Xylenes	1/7	24	3
Base Neutrals			
Acenaphthene	2/8	<11-20	4
Acenaphthylene	0/1		ND
Anthracene	0/1		ND
Benzidine	0/1		ND
Benzo(a)anthracene	0/1		ND
Benzo(a)pyrene	3/8	<66-160	48

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Leachate		
	Frequency	Range (ug/L)	Mean (ug/L)
Base Neutrals (Cont'd)			
Benzo(b)fluoroanthene	0/1		ND
Benzo(ghi)perylene	0/1		ND
Benzo(k)fluoroanthene	0/1		ND
bis (2-Chloroethoxy) methane	0/1		ND
bis (2-Chloroethyl) ether	1/5	10	2
bis(2-Chloroisopropyl) ether	1/1	10	10
bis (2-Ethylhexyl) phthalate	2/12	<33-<50	7
4-Bromophenyl phenyl ether	0/1		ND
Butyl benzyl phthalate	0/1		ND
2-Chloronaphthalene	0/1		ND
4-Chlorophenyl phenyl ether	0/1		ND
Chrysene	0/1		ND
Dibenzo(a,h)anthracene	0/1		ND
Dibenzofuran	1/7	<10	1
1,2-Dichlorobenzene	1/1	14	14
1,3-Dichlorobenzene	0/1		ND
1,4-Dichlorobenzene	0/1		ND
3,3'-Dichlorobenzidine	0/1		ND
Diethyl phthalate	4/12	24-570	80
Dimethyl phthalate	1/8	<30	4
Di-n-butyl phathalate	1/8	<11	1
2,4-Dinitrotoluene	0/1		ND
2,6-Dinitrotoluene	0/1		ND

TABLE 2-3
(Continue

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Leachate Frequency	 Range (ug/L)	 Mean (ug/L)
Base Neutrals (Cont'd)			
Di-n-octyl phthalate	0/1		ND
1,2-Diphenylhydrazine	0/1		ND
Fluoranthene	0/1		ND
Fluorene	0/1		ND
Hexachlorobenzene	0/1		ND
Hexachlorobutadiene	0/1		ND
Hexachlorocyclopentadiene	0/1		ND
Hexachloroethane	0/1		ND
Ideno(1,2,3-c,d)pyrene	0/1		ND
Isophorone	0/1		ND
2-Methyl naphthalene	1/7	<22	3
Naphthalene	2/12	80-99	15
Nitrobenzene	1/5	31	6
N-nitrosodimethylamine	0/1		ND
N-nitrosodi-n-propylamine	0/1		ND
N-nitrosodiphenylamine	6/12	22-9,800	1,314
Phenathrene	2/8	<22-<40	8
Pyrene	0/1		ND
1,2,4-Trichlorobenzene	0/1		ND
Acid Extractables			
2-Chlorophenol	0/1		ND
2,4-Dichlorophenol	0/5		ND
2,4-Dimethylphenol	0/5		ND

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Leachate		
	Frequency	Range (ug/L)	Mean (ug/L)
Acid Extractables (Cont'd)			
4,6-Dinitro-o-cresol	0/1		ND
2,4-Dinitrophenol	0/1		ND
4-Methylphenol	5/17	<300-9,100	950
2-Nitrophenol	0/1		ND
4-Nitrophenol	0/1		ND
p-Chloro-m-cresol	0/1		ND
Pentachlorophenol	0/1		ND
Phenol	5/8	12-2,100	221
2,4,6-Trichlorophenol	0/5		ND
Dioxin			
2,3,7,8-TCDD (ng/l)	0/1		ND
OCDD (ng/l)	1/1	0.58	0.6

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Soil			Sediment		
	Frequency	Range (mg/kg)	Mean (mg/kg)	Frequency	Range (mg/kg)	Mean (mg/kg)
Metals						
Aluminum	5/5	4,500-48,000	27,300	11/11	3,900-16,000	5,813
Arsenic	2/5	1.8-3.1	1	8/11	1.36-2.8	1
Barium	5/5	35-130	80	10/11	18.7-156	39
Beryllium	3/5	0.67-0.91	0.5	1/11	0.49	0.04
Cadmium	1/5	0.8	0.2	6/11	0.7-2.29	0.9
Calcium	5/5	2,000-4,900	2,860	10/11	735-3,800	1,483
Chromium	5/5	8.9-30	20	11/11	2.4-15	6
Cobalt	1/5	8.4	2	2/11	5.0-5.1	0.9
Copper	2/5	35-46	16	10/11	4-67.7	18
Iron	5/5	7,600-18,000	13,920	11/11	4,900-16,300	8,245
Lead	5/5	2.7-41	19	10/11	1.8-326	63
Magnesium	5/5	2,400-6,400	3,740	11/11	930-3,200	1,499
Manganese	5/5	220-960	576	11/11	63-290	147
Nickel	1/5	15	3	6/11	5.98-10.9	4
Potassium	5/5	910-4,300	2,022	9/11	540-1,800	783
Sodium	3/5	540-1,300	538	7/11	147-820	216
Thallium	1/5	12	2	-	-	-
Tin	-	-	-	1/11	5.71	0.5
Vanadium	5/5	11-39	26	9/11	8.09-19	10
Zinc	5/5	22-160	83	11/11	16-150	57

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Soil			Sediment		
	Frequency	Range (ug/kg)	Mean (ug/kg)	Frequency	Range (ug/kg)	Mean (ug/kg)
Volatile Organics						
Acetone	5/5	9-26,000	6,582	7/18	<4-21,000	1,291
Acrolein						
Acrylonitrile						
Benzene	2/5	3-59	12	2/18	<9-55	4
Bis (chloromethyl) ether						
Bromoform						
2-Butanone						
Carbon disulfide				6/18	5-260	54
Carbon tetrachloride				1/18	<7	0.4
Chlorobenzene						
Chlorodibromomethane				1/18	<16	0.9
Chloroethane						
2-Chloroethylvinyl ether						
Chloroform	1/5	22	4	5/8	<2-32	10
1,1-Dichloroethane	1/5	54	11			
1,2-Dichloroethane	1/5	490	98	1/8	15	2
1,1-Dichloroethylene						
1,2-Dichloropropane						
cis-1,3-Dichloropropylene						
Ethyl benzene	2/6	6-65	12	2/18	<5-95	6
2-Hexanone	1/5	300	60	1/18	73	4
Methyl bromide						
Methyl chloride						
4-Methyl-2-pentanone	1/5	550	11	1/18	34	2

TABLE 2-5
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

	Soil			Sediment		
Compound	Frequency	Range (ug/kg)	Mean (ug/kg)	Frequency	Range (ug/kg)	Mean (ug/kg)
Volatile Organics (Cont'd)						
Methylene chloride				9/18	6-120	23
1,1,2,2-Tetrachloroethane						
Tetrachloroethylene				1/18	<2	0.1
Toluene	1/5	400	80	4/18	<8-160	17
1,2-Dichloroethylene	1/5	8	1.6	1/18	<4	0.2
1,1,1-Trichloroethane				1/18	<10	0.6
1,1,2-Trichloroethane						
Trichloroethylene				3/18	<4-50	4
Trichlorofluoromethane						
Vinyl chloride						
trans-1,3-Dichloropropylene						
Xylenes	1/5	130	26	1/18	56	3
Base Neutrals						
Acenaphthene				5/18	<82-810	73
Acenaphthylene				5/18	<200-1,800	197
Anthracene				8/18	160-2,000	392
Benzidine						
Benzo(a)anthracene	2/5	130	52	8/18	800-4,700	971
Benzo(a)pyrene	1/5	100	20	9/18	770-4,100	1,063

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION:
CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Soil Frequency	Soil Range (ug/kg)	Soil Mean (ug/kg)	Sediment Frequency	Sediment Range (ug/kg)	Sediment Mean (ug/kg)
Base Neutrals (Cont'd)						
Benzo(b)fluoroanthene	1/5	140	28	8/18	660-6,400	1,240
Benzo(ghi)perylene	1/5	74	15	9/18	490-2,000	518
Benzo(k)fluoroanthene				3/18	760-6,200	436
bis (2-Chloroethoxy) methane						
bis (2-Chloroethyl) ether						
bis (2-Chloroisopropyl) ether						
bis (2-Ethylhexyl) phthalate				3/18	54-830	90
4-Bromophenyl phenyl ether						
Butyl benzyl phthalate						
2-Chloronaphthalene						
4-Chlorophenyl phenyl ether						
Chrysene	3/5	76-120	63	9/18	1,000-5,200	1,259
Dibenzo(a,h)anthracene				8/18	160-680	158
Dibenzofuran				4/18	77-650	79
1,2-Dichlorobenzene						
1,3-Dichlorobenzene						
1,4-Dichlorobenzene						
3,3'-Dichlorobenzidine						
Diethyl phthalate	1/5	75	15	1/18	<65	4
Dimethyl phthalate						
Di-n-butyl phathalate				9/18	90-1,800	312
2,4-Dinitrotoluene						
2,6-Dinitrotoluene						

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TABLE 2-
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

Compound	Soil			Sediment		
	Frequency	Range (ug/kg)	Mean (ug/kg)	Frequency	Range (ug/kg)	Mean (ug/kg)
Base Neutrals (Cont'd)						
Di-n-octyl phthalate						
1,2-Diphenylhydrazine						
Fluoranthene	5/5	43-300	146	7/18	2,200-14,000	3,078
Fluorene				7/18	110-2,100	262
Hexachlorobenzene						
Hexachlorobutadiene						
Hexachlorocyclo-pentadiene						
Hexachloroethane						
Ideno(1,2,3-c,d)pyrene				9/18	520-2,000	499
Isophorone						
2-Methyl naphthalene				2/18	<77-<80	3
Naphthalene	2/5	51-120	34	4/18	56-1,000	90
Nitrobenzene						
N-nitrosodimethylamine						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine	5/5	49-920	398	3/18	<95-56,000	3,122
Phenathrene	3/5	78-260	89	10/18	650-12,000	2,250
Pyrene	5/5	48-210	114	7/18	1,900-9,800	2,072
1,2,4-Trichlorobenzene						
Acid Extractables						
Benzoic Acid				3/18	76-460	56
2-Chlorophenol						
2,4-Dichlorophenol						
2,4-Dimethylphenol						

TABLE 2-3
(Continued)

INDICATOR CHEMICAL SELECTION: CONCENTRATIONS IN ENVIRONMENTAL MEDIA

	Soil			Sediment		
Compound	Frequency	Range (ug/kg)	Mean (ug/kg)	Frequency	Range (ug/kg)	Mean (ug/kg)
Acid Extractables (Cont'd)						
4,6-Dinitro-o-cresol						
2,4-Dinitrophenol						
4-Methylphenol				1/18	1,700	94
2-Nitrophenol						
4-Nitrophenol						
p-Chloro-m-cresol						
Pentachlorophenol						
Phenol	1/5	4,200	840			
2,4,6-Trichloropheno						
Dioxin						
2,3,7,8-TCDD (ng/l)	0/87		ND	0/8		ND
OCDD (ng/l)	104/152	0.03-10.6	0.3	8/11	0.07-0.61	0.2

RESPONSIVENESS SUMMARY
FOR THE
LAUREL PARK, INC.
SUPERFUND SITE
NAUGATUCK, CONNECTICUT

JUNE 23, 1988

Prepared for:

REGION I
U.S. ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

BOOZ, ALLEN & HAMILTON Inc.
Under Subcontract No. TESK-TEAM-013, WA Number 949
EPA Contract No. 68-01-7331

57

TABLE OF CONTENTS

Page

PREFACE.. 1

I. RESPONSIVENESS SUMMARY OVERVIEW......................... 2

II. BACKGROUND ON COMMUNITY INVOLVEMENT..................... 2

III. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES TO THESE COMMENTS... 3

- A. REMEDIAL ALTERNATIVES 4
  - Capping.. 4
  - Groundwater Extraction........................... 6
  - Pretreatment..................................... 7
  - Leachate Control and Treatment................... 8
  - Remedial Costs................................... 10
- B. PREFERRED ALTERNATIVES COMPARED TO OTHER SYSTEMS 11
- C. MONITORING.. 13
- D. SECURITY FENCE.................................... 14
- E. OFF-SITE CONTAMINATION............................ 14
- F. ENDANGERMENT ASSESSMENT........................... 15
- G. GENERAL COMMENTS.................................. 20
- H. EXTENSION OF THE COMMENT PERIOD................... 23

ATTACHMENT A - COMMUNITY RELATIONS ACTIVITIES CONDUCTED AT THE LAUREL PARK, INC. SUPERFUND SITE........ 24

ATTACHMENT B - REFERENCES TO SECTION III.F ENDANGERMENT ASSESSMENT RESPONSES....................... 25

Preface

The U.S. Environmental Protection Agency (EPA) held a public comment period from May 12, 1988 to June 9, 1988 to provide an opportunity for interested parties to comment on the draft Feasibility Study (FS), and Proposed Plan prepared for the Laurel Park, Inc. Superfund site in Naugatuck, Connecticut. The draft FS, completed in May 1988, examines and evaluates various cleanup options, called remedial alternatives, for addressing contamination at the site. EPA announced its preferred alternatives for the cleanup of the site in the Proposed Plan issued prior to the public comment period. An informal public meeting was held just prior to the public comment period.

The purpose of this Responsiveness Summary is to document EPA responses to the comments and questions raised during the public comment period. EPA considers all of the comments summarized in this document before selecting a final remedial alternative for the Laurel Park, Inc. site (Laurel Park).

This Responsiveness Summary is divided into the following sections:

I. Responsiveness Summary Overview - This section briefly summarizes public comments on the draft FS and remedial alternatives.

II. Background on Community Involvement and Concerns - This section summarizes major community concerns identified in the community relations plan and during the RI/FS at the Laurel Park site.

III. Summary of Comments Received During the Public Comment Period and EPA Responses to These Comments - This section summarizes both written and oral comments received during the public comment period and provides EPA responses to them. These comments are organized into categories representing the major issue areas that were identified from the comments received.

Attachment A - This attachment includes a list of the community relations activities conducted by EPA during the Remedial Investigation and Feasibility Study efforts at the Laurel Park, Inc. Superfund site.

Attachment B - This attachment includes a list of references cited in the responses in Section III. F. Endangerment Assessment.

I. OVERVIEW OF PUBLIC COMMENTS ON THE REMEDIAL ALTERNATIVES

EPA received oral comments during the public hearing, and written comments during the four week public comment period on the FS and Proposed Plan. Section III of this document summarizes the comments received and EPA's responses.

The comments received at the public hearing and during the comment period provided historical information of which EPA may not have been aware, questioned the processes by which public input was solicited during the RI/FS stages and the public comment period, asked for additional information on several components of the proposed alternative and other alternatives that were considered, and expressed concern for direct and side effects of implementing the components of the plan. Several citizens endorsed EPA's preferred plan. Other plans were endorsed by different citizens and by a potentially responsible party (PRP).

II. BACKGROUND ON COMMUNITY INVOLVEMENT

A variety of issues and concerns have been raised during the 20-year history of citizen involvement at the Laurel Park Landfill. Beginning in the early 1960s, residents living near the site complained about its operation. Complaints against the landfill included uncontrolled burning, spillage of chemicals, foul odors, and blowing debris.

The predominant concern in the past was over the potential for exposure of area residents to contaminants seeping from the landfill. Residents' fears about contamination focused on the area's groundwater and the unnamed stream running along Andrew Avenue. Citizens also feared exposure of children to contaminants in the steam that runs near an elementary school. Area residents wanted to identify fully the extent of and potential for contamination of their neighborhood. They requested that the issue of dioxin be accurately addressed, that samples be taken from residents' homes and from the school, that stream sediments be tested, and that the potential threat to the school be completely examined.

Two citizens groups have become involved in issues relating to the landfill. The Pollution Extermination Group (PEG) has been active since 1981. Originally organized to oppose expansion of the landfill, PEG has been a vigorous proponent of health testing for residents, and cleanup measures for the site. The Andrew Avenue Homeowners Association, formed in 1983, focused on concern over the leachate collection system and methods of leachate disposal. Relations between the Naugatuck municipal government and citizens living near the site have at times been antagonistic. This friction between the citizens and the local officials is one of the reasons EPA has considered local access to information and community involvement in the remedial process critical to successful implementation of the Superfund cleanup effort at the site. A series of "information exchanges" were requested by residents. A roundtable meeting held in the Summer of 1984 between PEG, Connecticut Fund for the Environment (CFE), Connecticut Department of Environmental Protection (CDEP), Laurel Park, Inc., Uniroyal, and EPA was a positive step in opening communications between those involved.

In June 1985, EPA released a community relations plan that outlined a program to address community concerns and keep citizens informed about and involved in activities during the Remedial Investigation, the Feasibility Study and the decision process regarding the site cleanup. On June 6, 1985, EPA held an informational meeting in the town to describe the plans for the Remedial Investigation and Feasibility Study (RI/FS).

The RI/FS was conducted under EPA oversight between 1985 and 1988. This two-phased study defined the nature and extent of contamination at the Laurel Park Site, and identified and evaluated alternatives to address site contamination. EPA held several meetings during this time to inform the public and answer questions.

III. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES TO THESE COMMENTS

An informal public hearing was conducted on May 25, 1988 to receive oral comments. In addition, during the public comment period EPA received written comments. A transcript of the public hearing and copies of written comments are available in the Administrative Record at the information repository in the Naugatuck Public Library, and also at EPA Region I offices in Boston, Massachusetts.

This section of the Responsiveness Summary presents a summary of all of the public comments offered during the public comment period, and EPA responses to these comments. Ms. Mary Lou Sharon and Ms. Mary Ann Maul, representing PEG, Mr. William Ostrander, Ms. Daisy Ostrander, Ms. Dorothy Mason, Mr. Frank Parda, Ms. Mare Swoditch, and Mr. Robert X. Schuster made oral comments at the public hearing. Mr. & Ms. Ostrander (commenting twice, once on behalf of themselves and a second time on behalf of PEG), Ms. Sharon, representing PEG, Ms. Maul, representing the Connecticut Fund for the Environment on behalf of PEG, Ms. Ann Marie Klosenski, Mr. Robert X. Schuster, Mr. Robert A. Smith, Jr., representing Uniroyal and Honorable Joseph Lieberman, Attorney General of Connecticut, submitted written comments.

The comments and EPA's responses have been summarized under eight major categories with subcategories, where appropriate. Issues are summarized to synthesize several different points made by commenters on a particular subject.

A. REMEDIAL ALTERNATIVES

CAPPING

Comment: Will placement of the cap stop run-off from the site?

Response: No, the landfill cap and planned vegetative cover will control run-off, not eliminate it. Drainage channels are planned as part of the cap design to control run-off and direct it to the unnamed stream. After completion of the cap and drainage system, nearly all run-off from the site will flow to the unnamed stream. Because the landfill will be covered, the rainwater will not come into contact with hazardous materials and the run-off to the unnamed stream will be uncontaminated by the landfill.

Comment: Will surface run-off from the landfill be contained and treated on-site, eliminating run-off to the unnamed brook?

Response: Surface run-off will not be contained on-site. As described in Section 4.2.2.4 of the Feasibility Study, run-off from the landfill cap will be channeled to the unnamed brook. The water quality should improve because rainfall will only come in contact with the surface of the landfill cap and drainage channels associated with the cap. The water quality of the unnamed brook should improve significantly upon completion of the cap and connection of the leachate collection system to the Andrew Avenue sewer.

Comment: Will run-off from the landfill corrode the culverts that have been installed along Andrew Avenue in order to contain the unnamed brook which originates at the landfill?

Response: The design of the landfill cap will include a system of drainage ditches in order to control surface run-off during rainstorms. Run-off from the capped landfill will be directed to the unnamed stream to the north of the landfill, as described in Section 4.2.2.4 of the Feasibility Study. After installation of the leachate control system, which will convey leachate to the sewer on Andrew Avenue, and installation of the cap, runoff to the unnamed stream will be uncontaminated by the landfill because rainwater will not come into contact with hazardous materials.

Comment: How much water will leave the site after the landfill has been capped?

Response: A detailed evaluation of the expected run-off from the capped landfill has yet to be completed. Based on an evaluation by a consultant for a PRP at a similar site in the region, it is estimated that the total annual run-off from the Laurel Park site after capping will be between 5-10 million gallons; or between 14,000 to 28,000 gallons per day on an average basis. During rainstorms, peak flows will be higher.

Comment: After the cap is built, will the landfill shrink?

Response: Yes, it is typical for capped landfills to settle and shrink in size. This phenomenon will be evaluated during design and means will be specified to assure that the integrity of the cap will not be compromised by the expected settlement of the landfill, or in other words, to ensure that the cap will not crack or deteriorate. In addition, after the cap is complete, it will be monitored annually as part of the operation and maintenance procedures. Also, cap repairs such as slope stabilization, regrading, and drainage ditch cleaning will also be included in the on-going operations and maintenance program.

Comment: Will the construction of the cap destroy the monitoring wells on site?

Response: It may be necessary to replace or retrofit certain monitoring wells in order to complete construction of the landfill cap. During design of the cap, construction details will be prepared so that all wells affected by construction are replaced or retrofitted prior to completion of construction.

Comment: What if asbestos was disposed of in the landfill without first placing it in dedicated cells?

Response: Upon completion of the proposed landfill cap, the potential for asbestos migration will be eliminated, regardless of the initial means of landfilling it.

GROUNDWATER EXTRACTION

Comment: Because of the groundwater extraction system, Alternative #3 is not appropriate for this site and, in fact, may have the potential to significantly increase the volume and mobility of identified hazardous substances, pollutants and contaminants migrating off-site.

The groundwater extraction system would require the construction of deep trenches and extraction wells into rock. Construction would require blasting or perhaps use of a special air impact drill. This type of activity has a great potential for creating many other fissures or increasing the size of the existing shallow bedrock fractures. Such activity could cause increased migration of contaminate flow or make new pathways of flow into the aquifer, possibly exacerbating rather than minimizing existing problems. Such recovery wells and trenches have not been frequently used in bedrock aquifers elsewhere due to the uncertainties in predicting and verifying capture of contamination.

Response: Alternative 3 is not expected to increase the volume of contaminants, rather the volume will be reduced as the landfill is dewatered.

The potential for increasing the permeability of the shallow bedrock was identified in the Feasibility Study, and was considered during EPA's decision process. Increased permeability of the shallow bedrock would allow it to have properties more closely associated with a porous media. This is expected to increase the efficiency of the groundwater extraction system. The fact that groundwater extraction wells and trenches have not been frequently used is not considered a limiting factor given site conditions. In addition, it should be noted that groundwater extraction wells and trenches have been used to dewater bedrock systems in the construction field.

Comment: Groundwater extraction at this site is not appropriate because such extraction is unnecessary in light of the public water supply being installed.

Response: The groundwater extraction system is appropriate as a mechanism to protect the aquifer regardless of the presence of a water line.

Comment: It is not possible to predict with any certainty the capture efficiency of the groundwater extraction system. If more is needed for groundwater protection than is described in existing Alternative 5, more protection can be gained through modifications in the existing leachate collection system. Such a change would enhance the capture of leachate at or near the generation source prior to entering the bedrock aquifer.

Response: The objective of the groundwater system is to extract shallow groundwater in the immediate vicinity of the landfill. This system will extend on through to the shallow bedrock, which is to the weathered and highly fractured zone of the bedrock aquifer. The proposed system is expected to achieve this objective. Modifications of the existing leachate collection system would not achieve the above objective.

Comment: Installation of the cap will reduce the leachate flow and thereby, over time, cause the bedrock aquifer level to fall below the critical capture point of all or part of the groundwater extraction system. This drop in groundwater level would make the system obsolete in a relatively short period of time.

Response: This statement regarding the life of the groundwater extraction system is difficult to agree or disagree with, since the amount of leachate currently within the landfill and the effectiveness of the cap is unknown. Extraction of groundwater and leachate contaminated at levels seen in the vicinity of the landfill, prior to its dispersion, is considered an effective approach to reducing groundwater contamination in the bedrock aquifer. Secondly, the evaluation of the present leachate collection system identified large quantities of landfill material to be saturated. This material is expected to generate leachate for a period of time. The length of this period will be dependent on the effectiveness of the cap, the amount of water within the fill material, the driving head and the permeability of fill and underlying materials. One of the extraction system's objectives is to supplement the cap in depressing the water table. It should be noted that many of the commentor's concerns have been identified in the FS and incorporated in EPA's decision. The selected remedial action recognizes some of these outstanding issues by allowing for predesign work to help design the groundwater extraction system.

PRETREATMENT

Comment: If alternative #3 is implemented (no pre-treatment) and if it becomes necessary later to add pre-treatment, will leachate continue to flow in the Andrew Avenue sewer during construction of the pre-treatment facilities, or would the leachate flow freely into the unnamed brook along Andrew Avenue?

Response: If alternative #3 is implemented (no pre-treatment) and pre-treatment is subsequently mandated, a decision regarding the need to prevent leachate flow into the Andrew Avenue sewer would be made based on the actual circumstances at that time. The State of Connecticut DEP will maintain responsibility for issuing and enforcing the pre-treatment operating permit. If it becomes necessary to stop leachate flow from entering the Andrew Avenue sewer, a system could be designed to prevent leachate from running over the ground or into the unnamed brook.

Comment: What action will be taken if dioxin is detected in the leachate, after completion of the landfill cap, when leachate is disposed via the Andrew Avenue sewer to the Naugatuck Water Pollution Control Plant?

Response: Presuming this would be in violation of the facilities pre-treatment permit, issued by the State DEP, leachate flow to the sewer would be stopped and controls would be installed to prevent leachate flow to the unnamed stream or otherwise over land. A treatment facility sufficient to comply with the State of Connecticut DEP pre-treatment requirements could then be designed and built on-site. Treatment technology is available for dioxin removal from leachate, including for example, carbon adsorption.

LEACHATE CONTROL AND TREATMENT

Comment: Will leachate that is discharged to the Rubber Avenue Interceptor and West Side Interceptor have an adverse effect on the integrity of the pipe and cause exfiltration from the Rubber Avenue Interceptor?

Response: Discharge of leachate from the Laurel Park Landfill to the Rubber Avenue interceptor is not expected to cause an adverse impact on the integrity of the sewer system. The suitability of the existing sewer system to convey leachate from Andrew Avenue to the Naugatuck Waste Treatment Plant has been evaluated by EPA and its contractors, Uniroyal and its contractors, and the Borough of Naugatuck Water Pollution Control Board and its engineers. No problems have been identified by these specialists in the proposed design.

Comment: What is the actual planned diameter for the proposed, new Andrew Avenue sewer to be used to convey leachate from the landfill to the existing Rubber Avenue sewer?

Response: The current planned diameter for the dedicated leachate line in Andrew Avenue, described in Section 4.2.3.2.2 of the Feasibility Study, is 6 inches. This is the actual internal pipe diameter available to convey the flow. This pipe size will be subject to review and revision by the Borough's Engineer during the final design of the pipeline. According to contractors for Uniroyal, as reported in a Public hearing conducted by the Naugatuck Water Pollution Control Board on May 5, 1988, the projected leachate flow from the Laurel Park Landfill will occupy only 2.3 percent of the capacity of the 6-inch sewer line.

Comment: Will the effective diameter and capacity of the planned Andrew Avenue sewer, to be used for conveyance of leachate, be significantly reduced by the accumulation of sediment and gravel? What would be the effect of sediment and gravel accumulation?

Response: It is unlikely that sand and gravel will accumulate in the leachate line because it will be used only for leachate flow, unlike some older sewers that also collect stormwater run-off (as a source of sand and gravel). Further, steep slopes along Andrew Avenue result in relatively high velocity flow which promotes flushing of the lines. In addition, normal sewer maintenance will include routine inspection and flushing, if needed, to assure that no material accumulates in the pipe, restricting flow.

Comment: Will a monitoring program be put in place to determine if leaks develop over time in the sewer system that will convey the leachate from the landfill to the Naugatuck Waste Treatment Plant?

Response: Routine sewer maintenance normally evaluates pipeline conditions including leakage.

Comment: Will the monitoring program include testing, after completion of the remedial action, to assure that the water quality of the unnamed brook is no longer being contaminated by leachate or surface run-off?

Response: The monitoring program planned after completion of the remedial action, as described in Section 4.2.1 of the Feasibility

Study, will include analysis of surface water samples collected from both the unnamed stream and Spruce Brook.

Comment: One commentor noted that the Town's Street Superintendent has reservations about accessing the Andrew Avenue leachate sewer for maintenance.

Response: There are a variety of occupational hazards associated with maintenance activities on any sewer. One hazard is the accumulation of toxic gases in the confined, unventilated space characteristic of all sewers. These confined space hazards exist whether or not leachate is included in the flow, and are well documented by the Water Pollution Control Federation and the Occupational Health and Safety Administration (OSHA). This hazard is acknowledged and discussed in the Feasibility Study on Page 4-62. Recognizing the potential hazards, appropriate health and safety guidelines for sewer maintenance have been developed by OSHA that are protective of human health. These guidelines must be followed to perform routine maintenance activities on the leachate sewer in Andrew Avenue in order to protect the health and safety of maintenance workers.

REMEDIAL COSTS

Comment: What is the cost difference for the monitoring programs planned for alternatives 2 and 3?

Response: The plan for monitoring after completion, described in Section 4.2.1 of the Feasibility Study, is the same for all alternatives. The feasibility study estimate of the annual cost of the planned monitoring program is $131,700. The present worth value of the planned monitoring program over 30 years is $1,241,500.

Comment: What is the true difference in cost between alternatives 2 and 3?

Response: The Feasibility Study estimate for the cost of construction for facilities associated with leachate and groundwater treatment under alternative 2 is in excess of $1,611,000.00 (in 1987 costs). The construction costs associated with leachate and groundwater treatment in alternative 3 are estimated in the Feasibility Study to be $200,000.00, a reduction of more than $1,400,000.00 from the cost of implementing alternative 2. In addition, the Feasibility Study states that alternative 2 will cost $112,000.00 more per year to operate than alternative 3. (Note: All cost information is included in Tables 4-12 and 4-13 of the Feasibility Study. Costs are modified to reflect the current State position that no pre-treatment facilities would be necessary for alternative 3.)

Comment: How much would a pre-treatment facility cost if it were built at some time in the future, say in five year increments, from five years to thirty years from now?

Response: It is not possible to project accurately the future cost of pre-treatment facilities without defining what the pre-treatment requirements would be. Assuming the pre-treatment requirements are equivalent to those detailed in the Feasibility Study, an inflation rate of 5% and a discount rate of 10%, the present worth cost of pre-treatment for various times in the future are:

	Present Worth Cost
5 yrs.	$1,086,600
10 yrs.	820,800
15 yrs.	620,100
20 yrs.	468,000
25 yrs.	353,900
30 yrs.	267,300

Comment: Residents should be reimbursed by the responsivble parties and/or the cleanup fund for the water costs incurred by connecting to the public water system.

Response: The waterline to be constructed under an agreement between Uniroyal Chemical Company, the Borough of Naugatuck, and the State of Connecticut will be installed and hooked up to the homes of the residents at no cost to them. The waterline will benefit these properties and will likely augment their value. It is inappropriate for EPA to commit to any form of enforcement action against potentially responsible parties or to any aspects of a negotiated settlement, and premature to comment on any contemplated enforcement action or the Agency's position in any settlement negotiations.

B. PREFERRED ALTERNATIVE COMPARED TO OTHER SYSTEMS

Comment: A commentor asked a series of questions seeking information on the existence of systems with components that match those found in both alternatives 2 and 3. The series includes questions relating to compliance with local codes; level of public participation in the decision process that approved the systems; use of public sewers as components of the systems; air pollution monitoring; existence of health studies connected to the systems; dissemination of public information about the systems; and inspection and maintenance schedules for the systems.

Response: Installation of caps at landfills, collection of leachate and extraction of groundwater are measures employed nationally at hazardous waste sites. Under the Superfund program, landfill caps have been included in 64 Records of Decision (ROD) signed as of June 1, 1988. Leachate collection systems are included in 41 of these RODs, while groundwater extraction is a component of 26 of the RODs.

These landfill sites cover a wide spectrum of size, hazardous waste content, hydrogeologic setting and locality. Remedial actions are planned at each site in a manner that considers site specific conditions. Of the 41 sites where RODs have been signed that include systems for leachate collection, 11 use municipal sewer systems to dispose wastewater, and four sites dispose untreated leachate in this manner. A total of 22 RODs have been signed to date that include some means of on-site leachate treatment. All of the sites disposing untreated leachate into municipal sewer systems are located in developed areas; three sites are in New Jersey and one is in Minnesota.

The Superfund process is highly structured, and is implemented consistently at all sites. Because each of the sites referenced is a Superfund site, selection and implementation of remedies that protect health and the environment, are cost-effective and utilize permanent resolutions to the maximum practical extent is rigorously and uniformly undertaken at each site. Prior to completion and signing of a Record of Decision, all sites are subject to the same project phases as Laurel Park, including: a Remedial Investigation, a Feasibility Study and a public comment period. Each of the sites with remedies similar to the Preferred Alternative for Laurel Park, whether in whole or in part, evolved from an evaluation of appropriate data, analysis of alternatives and consideration of public comment.

Every Superfund site evaluation must consider all applicable and appropriate requirements necessary to protect the public health, welfare and the environment according to the National Contingency Plan. As such, to the extent that Federal, State and local requirements are applicable, relevant or appropriate, consideration is given to these requirements during development and evaluation of remedial action alternatives. The suitability of the existing sewer system for conveying leachate from Laurel Park included technical evaluations by engineers on behalf of the Uniroyal, the EPA and the local municipal authority responsible for wastewater collection, conveyance and treatment. Similar evaluations may have been made at the four Superfund sites where this component is included in the remedial plan.

Regarding the dissemination of public information under Superfund, all sites include several public comment periods where documents such as Remedial Investigation Reports and Feasibility Studies are made available for review by the public. In addition, frequent public meetings, mailing of fact sheets to interested parties, and other community relations activities are important aspects of the Superfund program. In these ways, all issues related to selected remedies for all sites are fully presented for public consideration and comment.

Sewer maintenance is generally a local responsibility. The Agency assumes no responsibility under the Superfund program for the operation or maintenance of local facilities. Maintenance procedures for such sewers remains the responsibility of local authorities, despite the use of publicly owned sewers as components of Superfund remedial actions.

C. MONITORING

Comment: Why does EPA not plan to install monitoring on the southeast and northeast sides of the landfill after the cap is installed?

Response: The monitoring program to be implemented after completion of the remedial action has yet to be finalized. The goal of this monitoring program will be to assess the effectiveness of the remedy in achieving the program objectives as defined in the "Record of Decision," including protection of human health and the environment. For purposes of completing the Feasibility Study, a monitoring program was developed (reference Section 4.2.1) that includes analysis of samples from existing monitoring wells on all sides of the landfill.

Comment: Why was well monitoring and sampling discontinued after a priority pollutant scan failed to detect priority pollutants?

Response: The Monitoring Program discussed in this question is provided for in the Stipulated Judgment of the Hartford Superior Court, issued February 1, 1983, and approved by the Commissioner of CT DEP by letter dated July 31, 1984. This Monitoring Program is, therefore, separate from the EPA Superfund RI/FS rules. However, page 4 of the Amended Monitoring Program states:

"Pursuant to discussions at meeting held August 9, 1984, DEP agrees, as to any parameter not found at any of the sampling locations during the first quarter of sampling, analysis will not be required in the second, third, and fourth quarters."

D. SECURITY FENCE

Comment: A number of commentors requested that a security fence be installed around the perimeter of the site.

Response: The ROD includes security fencing as a component of the remedial action. A perimeter fence is an independent design and construction activity from the remainder of the remedial action. As such it may occur on an independent schedule.

E. OFF-SITE CONTAMINATION

Comment: One commentor asked if the area northwest of the site along Andrew Mountain Road from the crest of Andrew Mountain, easterly to Long Meadowbrook Pond has been contaminated.

Response: It is our understanding that the area of concern mentioned in the comment is a wetland area approximately 2,000 feet northwest of the site at a similar elevation as the landfill, just south of Andrew Mountain Road. In October 1985 the EPA Region I Water Quality Branch visited that area to determine if the wetlands might be impacted by remedial activities at the landfill. Observations from that visit included:

- The wetland area is at least five acres in size
- It is an extensive open water, scrub-shrub wetland complex
- Numerous animal "trails" were in evidence throughout upland areas, and many deer tracks were seen
- No surface water connections to the landfill area were observed.

EPA concluded that because no surface water connections exist between the landfill and the wetland, and because of the distance between these areas, no impacts upon the wetland are anticipated from proposed remedial activities at the landfill.

Comment: The water quality of Spruce Brook is currently being affected by run-off from the landfill. Why is this happening even though the landfill is closed?

Response: The Remedial Investigation documented the presence of volatile organic compounds and polyaromatic hydrocarbons (PAH) in Spruce Brook and suggested that these contaminants may have migrated from the Laurel Park Landfill. Likely sources include surface run-off, leachate and groundwater seepage into the brook. After capping of the landfill and completion of the leachate and groundwater collection systems, it is anticipated that the quality of Spruce Brook will be improved. As detailed in Section 4.2 of the Feasibility Study, Spruce Brook will be monitored after completion of the remedial action in order to evaluate the remedial effect on its water quality.

Comment: Commentors provided descriptions of two off-site dumping areas and photographs of an on-site area.

Response: EPA appreciates the photographs of the on-site area and the information that was provided on the two additional "dump" sites in Naugatuck. That information has been provided to the Superfund Support Section in EPA Region I. EPA will review and investigate these potential hazardous waste sites.

F. ENDANGERMENT ASSESSMENT

Note: The comments and responses in this section are technical in nature. A list of references cited in the responses may be found at the end of this document in Attachment B.

Comment: In presenting what is depicted as both a likely and "conservative" evaluation of exposure levels resulting from well contamination, observed contamination "means" and "maximums" are cited in the Feasibility Study, Endangerment Assessment. The value of such data may be misleading. Leaching of material from a waste site does not occur at a uniform rate; rather, material leaches out in "pulses." These "pulses" occur when large quantities of water are introduced into the aquifer, such as during a heavy rainfall or the rapid melting of snow. This increased amount of water leads to a temporary increase of out-migration of material from the site and intermittently elevated levels of leachate entering the aquifer. Thus, in the absence of long-term monitoring and correlation with groundwater conditions, the actual historic levels of contamination present in the drinking water are only very crudely modeled by the limited sampling of residential wells.

Response: The contaminant concentration in groundwater leaving the Laurel Park Landfill site varies. This is due to variations in the amount of water applied to the landfill by rain and snowmelt and to the heterogeneity of the deposited material itself. Because this type of situation is very common at hazardous waste sites, the Superfund Public Health Evaluation Manual specifies that all risk calculations will be done twice, with a "best estimate" and an "upper bound estimate" of the contaminant concentrations. The Endangerment Assessment (EA) has done this with its use of "means" and "maximums." The analytical results are a sampling of possible results and the numbers used are the "estimates," in the statistical sense. To arrive at a better estimate of the true maximum would be an extremely laborious task, requiring sampling at frequent intervals (1 hour, 5 minutes, perhaps less) for an extended period of time (weeks or months) and taking great pains to ensure consistency over time of the laboratory results. The biological effect estimates are based on long-term (usually lifetime) average exposures. Using the observed maximum assay values should provide an adequate overestimate of the adverse effects in the absence of corrective action.

Comment: Section 5.1.1 of the EA contains the second aspect of the exposure estimation that is likely to have been incorrect. In the section on non-drinking water use, airborne exposures as the result of release of volatiles into the air were considered to last for only twenty minutes, the length of a shower. Andelman, (Science of the Total Environment, 1985;47:443-460), has shown in a recent study that exposure resulting from showering is likely to persist over a longer period of time. The empirical measurements presented suggest that the EA data could underestimate exposure from this source by as much as 10-fold.

Response: Andelman (1985a, 1985b) built a "scaled-down model shower." He found that air concentrations of his model compound (trichloroethene) had not reached equilibrium (maximum) concentrations even after 80 minutes of continuous operation. When water flow was shut off, air concentration decreased approximately linearly, at a rate similar to the initial rate of rise. Andelman's studies (1985a, 1985b) assumed an exposure rate of 1 hour per week (less than 10 minutes per day) in the shower; this produces (assuming complete absorption from both routes) an intake quite similar to that from ingestion.

The Endangerment Assessment cites a later abstract by Andelman (1986) as its sources for the values of 50 percent liberation of dissolved chloroform and 80 percent liberation of dissolved trichloroethene. However, the EA based its calculations on the complete liberation of the dissolved chemicals. The EA assumptions of room volume, water use and shower exposure (20 minutes/day), are within the "likely range" used by McKone and are generally similar to the "representative values" used in these extremely elaborate three-component model analyses. McKone (1987) concluded that inhalation uptake of various volatile organic compounds, including two used by the EA, would be 1.5 to 6.0 times the ingestion uptake. In Malcolm Pirnie's calculations, total shower inhalation intake was very similar to, but slightly less than, total ingestion intake.

The U.S. EPA concludes that these variations in numerical results are distinctions without a significant difference in risk. The results of the EA are reasonable estimates of the shower exposure. If the "true" risk from this one exposure were underestimated by a factor of ten, this would bring the conservative case risk estimates outside U.S. EPA's target range of 10^{-4} to 10^{-7}, but the representative case and maximum residential well data estimates would still be well within that range.

Comment: Despite the implementation of a comprehensive containment of the site (Alternatives 2 or 3), contamination of some surface water may continue. This being the case, the result would likely be an underestimate by the EPA of the level of potential exposure to hazardous substances from surface water.

Response: U.S. EPA is unable to respond to this because it does not identify a location or mechanism for surface water contamination. All considered alternatives, except Alternative 1 (no action), include either collection and treatment of contaminated leachate or elimination (by removal or treatment) of the source of the leachate.

Comment: The cancer risk assessment as presented in the EA omits several considerations that may have lead to a significant underestimate of risk on which the FS is based. First, several recent human epidemiologic studies dealing with the indicator chemicals were ignored. A study by Isacson, et al. (Am J Epidemiol 1985;121:856-869) observed increased risk of colon and rectal cancer associated with 1,2 dichloroethane in the water supply. The levels were estimated at greater than or equal to 0.1 ug/l. A study of a leukemia cluster in Woburn, Massachusetts (Lagakos, et al.) (J. Am. Statis. Assoc. 1986;81:583-596) found an association with well water contaminated with trichloroethylene (267 ppb) and perchloroethylene (21 ppb). While these two studies are far from conclusive, and most would suggest quite controversial, they indicate that risks of cancer from chlorinated hydrocarbons may be greater than the EA estimates for the site.

Response: It is generally accepted by epidemiologists that isolated epidemiologic studies are inadequate to determine cause/effect relationships because they only show association.

One authority (cited in Gambel and Battigelli, 1978) lists nine criteria for determining cause and effect:

- Association (probability)
- Consistency (reproducibility in time and space)
- Specificity (uniqueness)
- Temporality
- Biological gradient (dose/response effect)
- Plausibility (biological possibility)
- Coherence (biological compatibility)
- Experimental verification
- Analogy (biological extrapolation)

Determining cause/effect relationships requires multiple, consistent studies (as with smoking). The only cases when the necessary repetitions could be decreased would involve an extremely rare (or even unique) effect, such as the peculiar tumors (hepatic hemangiosarcomas in humans and rodents) produced by vinyl chloride.

The Iowa study (Isacson and others, 1985) is a multiple regression analysis of many types of cancer (at least 12 are listed in the paper) and various chemicals (11 volatile organic chemicals and 43 elements). A positive relationship between cancer and 1,2-dichloroethane in drinking water was noted in their study. There are over one thousand statistical comparisons. Using the traditional critical probability level of $p = 0.05$, one would expect that two or three chemicals (actually 0.05 times 54, the number of chemicals) would show a statistically significant association with each type of cancer considered if the entire data set is randomly distributed, that is, if there are no real relationships at all. The actual results of the study are rather similar to this assumption. The most recent (March 1988) revision of the U.S. EPA's Integrated Risk Information System (IRIS) file on 1,2-dichloroethane includes no human data to support the carcinogenicity of this compound.

The commentor states that the Woburn Study (Lagakos and others, 1986a) is "quite controversial." In fact, the published study is followed immediately by a series of "Invited Comments" (MacMahon and others, 1986) the same length as the basic article and by a briefer "Rejoinder" (Lagakos and others, 1986b). The U.S. EPA has little to add to those comments. The last one (by Whittemore), for instance, applies the cause and effect criteria listed above and finds the study lacking in all nine criteria. Not mentioned by any commentator is the basic problem of the distribution of a rare effect (such as childhood leukemia) in relatively small population subgroups. If one takes a large population (such as the United States) and divides it into groups (the Woburn neighborhood that was studied and many thousands of other, equal-size groups), the incidence of leukemia will vary between the groups, following a Poisson distribution. Most neighborhoods will have no cases or one; a few will have many cases. With more limited studies (such as the Alsea, Oregon, miscarriage reports) this random distribution, alone, is an adequate explanation for the "cluster." Lagakos and others (1986a) did not provide the data for testing this hypothesis.

U.S. EPA concludes that these two epidemiological studies are inadequate, in themselves, to modify the current risk estimators used in the EA. Additional work, along the lines of the criteria cited above, is necessary.

Comment: The EA relatively ignores chemicals such as chromium, which are well demonstrated carcinogens. The rationalization is that only inhalation is considered to be a demonstrated route of exposure for chromium to act as a carcinogen; however, it is clear that, just as volatile agents may enter the household air through non-drinking uses of water, so may inorganic particulates.

Response: The most recent, authoritative review (ATSDR, 1987) notes that while low level inhalation exposure to hexavalent chromium is well known to be carcinogenic to humans, there are no reported human or animal carcinogenicity effects after oral exposure.

The commentor suggested that groundwater may produce inorganic particulates that could be inhaled. U.S. EPA notes that although processes that produce inorganic particulates from water ("spray-drying") are used industrially in various branches of the chemical industry, the only possible household approximation would be watering a lawn with a sprinkler on an extremely hot, dry day. Such a process would be very incomplete, and the only particulates would be of near-molecular dimension, since only the smallest water droplets could evaporate fully. These ultrafine particles are very poorly absorbed because they do not settle in the respiratory tract. No such particulates would be produced in a saturated atmosphere, such as a shower. Therefore, this inhalation exposure is negligible, at most.

Comment: The assumption of the cancer risk being additive from the different chemical exposures very likely results in an underestimate of the overall cancer risk. The interaction of two or more agents to greatly increase risks of cancer in excess of additivity is well established. Perhaps the best known example is the interaction of cigarette smoking and asbestos in the production of lung cancer. Given the large number of proven and suspect carcinogens present at the Laurel Park site, the likelihood of an interactive combination existing there appears almost certain.

Response: Neither the EA nor U.S. EPA found any solid evidence of interactions among the indicator chemicals, much less the isobolograms required to quantitatively evaluate such an interaction. Such data are available for a number of drug combinations (such as sulfonamides and folic acid reductase inhibitors) but for very few other chemicals. In addition, interactions may be negative (antagonistic) as well as positive (synergistic). In fact, selenium, for one, is reported to cause both sorts of interaction (Carson and others, 1986). Because of these considerations, it is the general U.S. EPA policy to assume additivity of both different chemicals and various exposure routes (U.S. EPA, 1986, page 101).

G. GENERAL COMMENTS

Comment: EPA and Uniroyal have a vested interest in the selection of the remedial action. EPA and Uniroyal have already implemented or agreed to implement elements of the preferred remedy the cost of which Uniroyal as a PRP will be required to pay.

Response: These comments are argumentative and not founded on fact. It is inappropriate and premature for EPA to comment on the issue whether any particular person will be liable to pay the cost of response actions. EPA and Uniroyal have not implemented or agreed to implement any portion of the preferred remedial action. EPA has no "vested interest" in the selection of the remedial action, but is statutorily charged with responsibility for the selection of the remedial action.

Comment: In its discussion of groundwater treatment technology, the FS "double-counts the factors of economics and feasibility based on the Safe Drinking Water Act (Maximum Contaminant Levels)" to the detriment of the considerations of health and the environment.

Response: The reference to "double counting" in this comment is unclear. In analyzing remedial alternatives under CERCLA, EPA does not "count" factors. Rather, as stated in the ROD, EPA analyzes remedial alternatives in light of certain specified criteria and is obligated to find that the selected remedial action satisfies the requirements of CERCLA and, to the extent practicable, the NCP. CERCLA specifically requires that the selected remedial action must be protective of human health and the environment, and must satisfy applicable or relevant and appropriate statutory or regulatory requirements and must be cost effective.

Comment: The Superfund amendments disfavor off-site treatment. However, because off-site treatment is one of the key elements of the preferred alternative, EPA should provide a more persuasive justification for that selection than the Feasibility Study does now.

Response: CERCLA Section 121(b) states that remedial actions in which treatment that permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants and contaminants is a principal element, are to be preferred over remedial actions that do not involve such treatment. The offsite transport and disposal [emphasis added] of hazardous substances or contaminated materials without such treatment should be the least favored alternative remedial action where practicable treatment technologies are available.

Comment: One commentor stated that the issue of remedial selection is a human rights issue and that on-site treatment of leachate protects his "constitutional rights to life, liberty, pursuit of happiness and quality of life."

Response: The commentor has not made clear the manner in which the choice of a recommended remedial action implicates his constitutional rights. EPA believes that its selected remedial action does not infringe upon any of the commentor's constitutionally guaranteed rights, especially any rights traditionally considered to be human rights or civil rights, such as equal protection of the laws and due process of law.

Comment: There appears to be no reference in the Feasibility Study to the fact that dioxin has been detected in several residential wells.

Response: Analytical data for the site are presented in the Remedial Investigation Report. Interested parties may refer to page 3-35 of the RI report for a discussion on the issue. Supporting data is included in Appendix A of the RI.

Comment: One commentor expressed concern that radioactive waste or nuclear waste might have been dumped in the landfill when material from the Westport Landfill was transferred to Laurel Park.

Response: There is no evidence of radioactive waste disposal at Laurel Park based on the investigations performed to date. No evidence of radioactive waste has been noted by investigators in the field. In addition, no records have been discovered that document the disposal of radioactive or nuclear waste at either the Laurel Park or Westport Landfills. Westport public officials are formally on the record with EPA declaring that no hazardous waste was disposed in the Westport Landfill. The disposal of radioactive waste is strictly regulated by the Nuclear Regulatory Commission. It is unlikely that radioactive waste was disposed of in the Westport Public Landfill.

Comment: Residents requested that the remedial package include a long-term health effects study, a health registry and a health surveillance program.

Response: CERCLA Section 104(i)(1) states that the Agency for Toxic Substances and Disease Registry (ATSDR) shall "effectuate and implement the health related authorities of this Act."

The ATSDR has performed a "health assessment" of the site as required under Section 104(i)(6). If a pilot study of health effects for selected groups is desired as discussed in Section 104(i)(7), the individual or group desiring such a pilot study must petition the ATSDR directly for such a study.

Petitions should be sent to:

Barry Johnson, Ph.D.
Associate Director
CDC/ATSDR
1600 Clifton Rd., N.E.
Atlanta, GA 30333

Petitions should include:

- The name, address and phone of a contact person
- Any information the petitioner feels is important, including complaints, known or potential exposures, nearby facilities or sites, and any symptoms.

The ATSDR will respond within ten working days of receipt of the petition. It should be noted that the ATSDR will determine if such a study is necessary, and if so, perform the pilot study. Additionally, on the basis of the results of the pilot study, health assessment, or other study, the ATSDR may decide it is appropriate to conduct full scale epidemiological or other health studies as may be necessary to determine the health effects on the population exposed.

Comment: Because the NWPCF is owned by several potentially responsible parties, as defined under CERCLA §107(a), and third party defendants in The B.F. Goodrich Company v. Harold Murtha, Civil Action No. N-87-52 (PCD), a citizen oversight committee should determine when back-up measures should be implemented in the case of failure of off-site treatment.

Response: This comment does not specify the connection between naming the Borough of Naugatuck (the only owner of the NWPCF known to EPA) as a third party defendant in the B.F. Goodrich litigation and the need for a citizen oversight committee, nor can EPA discern any such connection. If there were any need for such a committee, EPA knows of no authority under which EPA could require it. The NWPCF will be required by the State of Connecticut to comply with the provisions of its NPDES permit. In addition, a Pretreatment Permit which is also issued by the the State of Connecticut is required to discharge to the sewer.

H. EXTENSION OF THE COMMENT PERIOD

Comment: EPA received two written requests and several verbal requests to extend the public comment period to allow the requestors to procure a Technical Assistance Grant (TAG) to obtain assistance to comment on the Feasibility Study.

Response: EPA responded to these two requests directly in writing -- copies may be found in the Administrative Record. EPA denied these requests for an extension of the public comment period. To extend the public comment period to allow processing of the TAG Grant application would violate the Interim Final Technical Assistance Grant regulations which state:

> "The schedule for response activities at a site will not be affected by the Technical Assistance Grant application process."

Comment: Several commentors requested expedited treatment of the TAG application.

Response: EPA also responded to this request in a letter dated June 2, 1988. Once a complete application is received, EPA will make every attempt to evaluate the application as quickly as possible. EPA would like to point out that the process for review and evaluation of technical assistance grant applications and the procurement of a technical advisor must follow certain steps as described in the TAG regulations and EPA's grant and procurement regulations (40 CFR Parts 30 and 33, respectively).

ATTACHMENT A

Community Relations Activities Conducted at the Laurel Park, Inc. Superfund Site in Naugatuck, Connecticut

- November, 1984 - EPA released a community relations plan that described citizen concerns about the site, and outlined a program to address those concerns and inform and involve citizens in site activities during the remedial phase.

- June 6, 1985 - EPA held an informational public meeting to describe the plans for the Remedial Investigation and Feasibility Study.

- November 13, 1985 - EPA held an informational public meeting to discuss the Remedial Investigation progress to date.

- February 26, 1987 - EPA held an informational public meeting to discuss and respond to questions concerning the results of the Remedial Investigation and Endangerment Assessment.

- May 11, 1988 - EPA held an informational public meeting to discuss cleanup alternatives presented in the Feasibility Study and to present the Agency's proposed plan.

- May 12, 1988 through June 9, 1988 - EPA held a public comment period to accept public comments on the alternatives presented in the Feasibility Study, the Proposed Plan, and all other documents previously released to the public.

- May 25, 1988 - EPA held a public hearing to accept oral comments on the alternatives presented in the Feasibility Study, the Proposed Plan, and all other documents previously released to the public.

ATTACHMENT B

References to Section III.F.
Endangerment Assessment Responses

Agency for Toxic Substances and Disease Registry, 1987. *Draft Toxicological Profile for Chromium*.

Andelman, Julian B. and others, 1986. Volatilization of Trichloroethylene and Chloroform from an Experimental Bath and Shower System. NTIS PB86 - 176120. Abstracts, 192nd American Chemical Society Conference, September.

Andelman, Julian B., 1985a. Inhalation Exposure in the Home to Volitile Organic Contaminants of Drinking Water. *Sci. Total Environ*. 47:143-160.

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Carson, Bonnie L., Harry V. Ellis III, and Joy L. McCann, 1986. *Toxicology and Biological Monitoring of Metals in Humans*. Chelsea, Michigan, Lewis Publishers.

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Lagakos, S.W., B.J. Wessen, and M. Zelen, 1986a. Analysis of Contaminated Well Water and Health Effects in Woburn, Massachusetts. *J. Amer. Statis. Assoc*. 81:583-596.

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MacMahon, Brian, and others, 1986. Invited Comments. *J. Amer. Statis. Assoc*. 86:597-610

Malcolm Pirnie, Inc., 1987. Endangerment Assessment, Laurel Park Landfill, February.

Maul, Mary Ann, 1988. Connecticut Fund for the Environment, Inc., letter to Margaret Velie, U.S. EPA Region I, June 8.

McKone, Thomas E., 1987. Human Exposure to Volatile Organic Compounds in Household Tap Water: The Indoor Inhalation Pathway. Environ. Sci. Technol. 21:1194-1201

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Laurel Park, Inc.

NPL Site Administrative Record

Index

As of June 29, 1988

Prepared for

Region I
Waste Management Division
U.S. Environmental Protection Agency

With Assistance from

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Introduction

This document is the Index to the Administrative Record for the Laurel Park, Inc. National Priorities List (NPL) site. Section I of the Index cites site-specific documents, and Section II cites guidance documents used by EPA staff in selecting a response action at the site.

The Administrative Record is available for public review at EPA Region I's Office in Boston, Massachusetts, and at the Howard Whittemore Memorial Library, 243 Church Street, Naugatuck, Connecticut 06770. Questions concerning the Administrative Record should be addressed to the EPA Region I site manager.

The Administrative Record is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

Section I

Site-Specific Documents

ADMINISTRATIVE RECORD INDEX
for the
Laurel Park, Inc. NPL Site

1.0 Pre-Remedial

1.2 Preliminary Assessment

1. "Preliminary Site Assessment," Ecology and Environment, Inc. (February 27, 1981).

3.0 Remedial Investigation (RI)

3.1 Correspondence

1. Letter from Matt Schweisberg, EPA Region I to Camille Connick, EPA Region I (October 8, 1985).
2. Letter from Merrill S. Hohman, EPA Region I to William F. Broden, Uniroyal Chemical Company, Inc. (October 16, 1986).
3. Letter from Susan H. Shumway, Uniroyal Chemical Company, Inc. to Merrill S. Hohman, EPA Region I (October 22, 1986).

3.2 Sampling and Analysis Data

The Sampling and Analysis Data for the Remedial Investigation (RI) may be reviewed, by appointment only, at EPA Region I, Boston, Massachusetts.

3.4 Interim Deliverables

1. "Remedial Action Master Plan," Camp Dresser & McKee Inc. (June 1983).
2. "Site Operations Plan," Malcolm Pirnie (June 1985).

3.6 Remedial Investigation (RI) Reports

1. "Draft Remedial Investigation Report," Malcolm Pirnie (August 1986).
2. "Remedial Investigation Report," Malcolm Pirnie (February 1987).

3.7 Work Plans and Progress Reports

1. "Remedial Investigation/Feasibility Study Work Plan," Malcolm Pirnie (May 1985).

3.9 Health Assessments

1. "Health Assessment for the Laurel Park Landfill," U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (December 4, 1986), including Addendum (May 11, 1988).

3.10 Endangerment Assessments

1. "Draft Endangerment Assessment," Malcolm Pirnie (May 1986).
2. "Endangerment Assessment," Malcolm Pirnie (February 1987).

4.0 Feasibility Study (FS)

4.1 Correspondence

1. Letter from Heather M. Ford, EPA Region I to William F. Broden, Uniroyal Chemical Company, Inc. (March 27, 1987).
2. Letter from Edward K. McSweeney, EPA Region I to Ira Leighton, EPA Region I (March 15, 1988).

4.5 Applicable or Relevant and Appropriate Requirements (ARARs)

1. Letter from Heather M. Ford, EPA Region I to Edward Parker, State of Connecticut Department of Environmental Protection (April 17, 1987).
2. Cross-Reference: Set of Comments from Elsie B. Patton, State of Connecticut Department of Environmental Protection on the February 1988 "Draft Feasibility Study" (Set of Comments Dated March 14, 1988). [Filed and cited as entry number 1 in 4.6 Feasibility Study (FS) Reports].

4.6 Feasibility Study (FS) Reports

1. Set of Comments from Elsie B. Patton, State of Connecticut Department of Environmental Protection on the February 1988 "Draft Feasibility Study" (Set of Comments Dated March 14, 1988).
2. "Feasibility Study," Malcolm Pirnie (May 1988).

Comments received during the public comment period on the Feasibility Study (FS) Report are filed and cited in 4.9 Proposed Plans for Selected Remedial Action.

4.7 Work Plans and Progress Reports

1. Cross-Reference: "Remedial Investigation/Feasibility Study Work Plan," Malcolm Pirnie (May 1985) [Filed and cited as entry number 1 in 3.7 Work Plans and Progress Reports].

4.9 Proposed Plans for Selected Remedial Action

1. "Proposed Plan for Remedial Action," EPA Region I (May 3, 1988).
2. Set of Comments from Mary Anne Maul, Pollution Extermination Group, Inc. on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated May 6, 1988).
3. Transcript, Laurel Park, Inc. Public Hearing Commenting on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (May 25, 1988).
4. Set of Comments from Ann Marie Klosenski on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated May 30, 1988).
5. Set of Comments from Mary Lou Sharon, Pollution Extermination Group, Inc. on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated May 1988).
6. Response from Margaret Velie, EPA Region I on the May 6, 1988 Set of Comments from Mary Anne Maul, Pollution Extermination Group, Inc. (Response Dated June 2, 1988).
7. Set of Comments from Daisy Ostrander, Pollution Extermination Group, Inc. on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated June 6, 1988).

8. Set of Comments from Joseph J. Lieberman, State of Connecticut Attorney General on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated June 6, 1988).
9. Set of Comments from Daisy Ostrander and William F. Ostrander, Sr., Members of the Public on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated June 6, 1988).
10. Set of Comments from Robert A. Smith, Jr., Uniroyal Chemical Company, Inc. on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated June 7, 1988).
11. Set of Comments from Mary Anne Maul, Pollution Extermination Group, Inc. on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated June 8, 1988).
12. Set of Comments from Robert X. Shuster, Member of the Public on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (Set of Comments Dated June 8, 1988).
13. Response from Margaret Velie, EPA Region I on the June 8, 1988 Set of Comments from Robert X. Shuster, Member of the Public (Response Dated June 21, 1988).
14. Response from Mary H. Grealish, EPA Region I on the June 8, 1988 Set of Comments from Robert X. Shuster, Member of the Public (Response Dated June 22, 1988).

5.0 Record of Decision (ROD)

5.4 Record of Decision (ROD)

1. Record of Decision, EPA Region I (June 29, 1988).

10.0 Enforcement

10.3 State and Local Enforcement Records

1. Letter from Elizabeth C. Barton, Laurel Park, Inc. to the Honorable John W. Anderson, State of Connecticut Department of Environmental Protection (April 16, 1987).

10.7 Administrative Orders

1. Administrative Order, Uniroyal Chemical Company, Inc. and Laurel Park, Inc. (May 16, 1985).
2. Administrative Order, Uniroyal Chemical Company, Inc. and Laurel Park, Inc. (June 16, 1986).
3. Cross-Reference: Letter from Merrill S. Hohman, EPA Region I to William F. Broden, Uniroyal Chemical Company, Inc. (October 16, 1986) [Filed and cited as entry number 2 in 3.1 Correspondence].
4. Cross-Reference: Letter from Susan H. Shumway, Uniroyal Chemical Company, Inc. to Merrill S. Hohman, EPA Region I (October 22, 1986) [Filed and cited as entry number 3 in 3.1 Correspondence].
5. Administrative Consent Order, Uniroyal Chemical Company, Inc., State of Connecticut, and the Borough of Naugatuck, Connecticut (May 27, 1987).

10.9 Pleadings -- Directly Related to Trial (Current Enforcement Activity)

1. Complaint, *United States of America v. Harold Murtha, Terrance Murtha, Murtha Trucking, Inc., Murtha Enterprises, Inc., Murtha Waste Control Corporation, Beacon Heights, Inc., and Laurel Park Inc.*, United States District Court for the District of Connecticut, Civil Action No. N-87-74 (PCD) (March 3, 1987).
2. Motion for Leave to Amend Pleading, *The B.F. Goodrich Company et al., v. Harold Murtha et al.; Uniroyal Chemical Company, Inc. v. Harold Murtha et al.; United States of America v. Harold Murtha et al.; State of Connecticut v. Harold Murtha et al.* United States District Court for the District of Connecticut Civil Action No. N-87-52,-67,-73, &-74 (PCD) (February 16, 1988).
3. First Amended Complaint, *United States of America v. Harold Murtha et al.*, United States District Court for the District of Connecticut, Civil Action No. N-87-74 (PCD) (February 16, 1988).

11.0 Potentially Responsible Party (PRP)

11.9 PRP-Specific Correspondence

1. Cross Reference: Letter from Heather M. Ford, EPA Region I to William F. Broden, Uniroyal Chemical Company, Inc. (March 27, 1987) [Filed and cited as entry number 1 in 4.1 Correspondence.
2. Master Notice Letter from EPA Region I to PRPs, with Attached List of Recipients (May 19, 1988).

13.0 Community Relations

13.2 Community Relations Plans

1. "Community Relations Plan," NUS Corporation (June 1985).

13.3 News Clippings/Press Releases

1. "Environmental News Release," EPA Region I (May 20, 1985).
2. "Environmental News Release," EPA Region I (October 28, 1985).
3. "Environmental News Release," EPA Region I (February 13, 1987).
4. "Press Release," U.S. Department of Justice (March 3, 1987).
5. "Environmental News Release," EPA Region I (June 3, 1987).
6. "Environmental News Release," EPA Region I (May 2, 1988).

13.4 Public Meetings

1. EPA Region I Meeting Agenda, Public Meeting (June 6, 1985).
2. EPA Region I Meeting Agenda, Public Meeting (November 13, 1985).
3. EPA Region I Meeting Agenda, Public Meeting (February 26, 1987).
4. EPA Region I Meeting Agenda, Public Meeting (May 11, 1988).
5. Cross Reference: Transcript, Laurel Park, Inc. Public Hearing Commenting on the May 1988 "Feasibility Study" and the May 3, 1988 "Proposed Plan for Remedial Action" (May 25, 1988) [Filed and cited as entry number 3 in 4.9 Feasibility Study (FS) Reports].

13.5 Fact Sheets

1. "Laurel Park Landfill, Inc. Fact Sheet," EPA Region I (May 1985).
2. "Laurel Park Landfill - EPA Progress and Plans," EPA Region I (July 1986).
3. "Superfund Program Fact Sheet," EPA Region I (February 1987).
4. "Superfund Program Fact Sheet," EPA Region I (May 1988).

16.0 Natural Resource Trustee

16.1 Correspondence

1. Letter from Gordon E. Beckett, U.S. Department of the Interior to Margaret Velie, EPA Region I (July 21, 1987).
2. Letter from Kenneth Finkelstein, National Oceanic and Atmospheric Administration to Margaret Velie, EPA Region I (September 18, 1987).

16.4 Trustee Notification Form and Selection Guide

1. Letter from Merrill S. Hohman, EPA Region I to William Patterson, U.S. Department of the Interior (June 12, 1987).
2. Letter from Merrill S. Hohman, EPA Region I to Sharon Christopherson, National Oceanic and Atmospheric Administration (June 12, 1987).

17.0 Site Management Records

17.7 Reference Documents

The appendices for the records cited in entry numbers 2 and 4 may be reviewed, by appointment only, at EPA Region I, Boston, Massachusetts.

1. "Hydrogeologic Report - Laurel Park Landfill - Relative to Abatement Order Compliance," Fuss & O'Neill, Inc. (January 20, 1982).
2. "Assessment of the Geology and Hydrogeology of the Laurel Park Landfill - Volume I," Fred C. Hart Associates, Inc. (February 1983).
3. "Oxford Sewer Connection Study," Malcolm Pirnie (April 1985).
4. "Annual Monitoring Report," Fred C. Hart Associates, Inc. (October 1986).

Section II

Guidance Documents

GUIDANCE DOCUMENTS

EPA guidance documents may be reviewed at EPA Region I, Boston, Massachusetts.

General EPA Guidance Documents

1. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, amended October 17, 1986.

2. Memorandum from Gene Lucero to the U.S. Environmental Protection Agency, August 28, 1985 (discussing community relations at Superfund Enforcement sites).

3. Memorandum from J. Winston Porter, July 9, 1987 (discussing interim guidance on compliance with applicable or relevant and appropriate requirements).

4. "National Oil and Hazardous Substances Pollution Contingency Plan," Code of Federal Regulations (Title 40, Part 300), 1985.

5. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Community Relations in Superfund: A Handbook (Interim Version) (EPA/HW-6), September 1983.

6. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Handbook of Remedial Action at Waste Disposal Sites (EPA/625/6-85/006), October 1985.

7. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Draft Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (OSWER Directive 9283.1-2), September 20, 1986.

8. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Superfund Public Health Evaluation Manual (OSWER Directive 9285.4-1), October 1986.

9. U.S. Environmental Protection Agency. Office of Ground-Water Protection. Ground-Water Protection Strategy, August 1984.

10. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Additional Interim Guidance for Fiscal Year 1987 Record of Decisions, (OSWER Directive 9355.0-21), July 24, 1987.

11. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Guidance on Feasibility Studies under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (EPA/540/G-85/003), June 1985.

12. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Guidance on Remedial Investigations under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (EPA/540/G-85/002), June 1985.

13. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Interim Guidance on Superfund Selection of Remedy (OSWER Directive 9355.0-19), December 24, 1986.

14. U.S. Environmental Protection Agency. Office of Waste Programs Enforcement. The Endangerment Assessment Handbook, August 1985.

15. U.S. Environmental Protection Agency. Office of Waste Programs Enforcement. Toxicology Handbook, August 1985.

16. U.S. Environmental Protection Agency. Office of Water and Waste Management. Evaluating Cover Systems for Solid and Hazardous Waste. 1980.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

June 24, 1988

Mr. Michael R. Deland
Regional Administrator
U.S. EPA Region I
JFK Federal Building
Boston, Massachusetts 02203

Dear Mr. Deland:

I am writing to inform you that Connecticut has reviewed the draft Record of Decision for the Laurel Park Landfill and concurs with the selected remedy.

I am looking forward to the implementation of remedial measures at this site which as you know is the State's highest priority site on the National Priority List.

Sincerely yours,

Leslie Carothers
Leslie A. Carothers
Commissioner

LA:et

Phone:
165 Capitol Avenue • Hartford, Connecticut 06106

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